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The Arris and Gale Lectures

ON

SOME PROBLEMS RELATING TO THE EVOLUTION OF THE BRAIN.

Delivered at the Royal College of Surgeons of England on Dec. 13th, 15th, and 17th, 1909,

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PROFESSOR OF ANATOMY IN THE UNIVERSITY OF MANCHESTER.

LECTURE III.[1]

Delivered on Dec. 17th.

MR. PRESIDENT AND GENTLEMEN,—In the last lecture I sketched in broad outline the chief phases in the evolution of the cerebral cortex, so far as we know and understand them at present, up to the stage when definite signs are beginning to become manifest of the coming of the neopallium. We have seen that the wholly indefinite rudiment of the cortex which is found in the brain of the lamprey, at the very root of the vertebrate phylum, becomes larger and more definitely mapped out in the sharks and their allies as a distinct cortical layer; and when we go a stage higher, to the mud-fishes, we find in their brains a stepping-stone which enables us to traverse the enormous gap which separates other fishes from the reptiles; the cortex in them has become larger and much more compactly arranged into a definite layer of cells, which is already beginning to show signs of specialisation. When we pass from the mud-fishes to the reptiles these changes foreshadowed in the former have become realities; the pallium has become definitely subdivided into hippocampus, subiculum, and pyriform lobe, and the admission into the hemisphere of sensory fibres other than those which subserve the senses of smell and taste has exercised a disturbing influence on the structure of the hemisphere (compare Figs. 16 and 17).

These disturbing influences manifest themselves in different ways in the different reptilian orders, so that it becomes difficult to institute *exact* comparisons between the cortical formations in snakes, lizards, tortoises, and crocodiles; and the simplest phase of the reptilian pallium, seen in the "tuatara" lizard (*Hatteria* or *Sphenodon*), though comparable with the condition found in the mud-fish's brain, has not yet been homologised precisely with the pallial formations seen in the other reptilian orders. A vast amount of detailed research must be accomplished before order can be resolved out of the chaos which has resulted from hasty comparisons of the cortex of various reptiles and mammals, one with another, and before we can see in all clearness the exact path along which the mammal has passed in its evolution from some reptile-like ancestor. However, in spite of all these uncertainties, we are acquainted with a sufficient number of features, possessed in common by all reptilian brains and those of the most primitive mammals, to be able to form a very precise picture of how the cortex of the immediate ancestor of the mammal must have been arranged. (Fig. 17. Repeated from Lecture II.)

I disagree with most other writers upon this subject in maintaining that no true neopallium is found in the reptilian brain. In making this statement I am fully aware of the fact that (for the reasons explained below) I am recanting my own previously expressed opinion; but renewed examination of the anatomy of the brain in the reptile has convinced me that there is no structure yet differentiated, either from the pallium or from the corpus striatum, which can be homologised with any degree of exactitude with the neopallium. [It is necessary to make the explanatory reservation, to which I referred in my last lecture, that the subiculum hippocampi is a transition-region between the hippocampal and neopallial formations, and is not true neopallium, even though it is convenient to class it with the latter *for merely descriptive purposes*. The part of the reptilian cortex called neopallium in my former publications is subiculum; so long as we fail to discriminate between the latter and the true neopallium we cannot logically deny the existence of this structure in reptiles.]

Yet in the most primitive mammals a definite and properly constituted neopallium is present, into connexion with which there have grown nerve-tracts, conveying from the optic thalamus impressions brought to it by the nerves of touch, sight, and hearing. To represent the most primitive form of this neopallium I have drawn a hypothetical transverse section of the front end of a promammalian brain, to which I referred at the close of the last lecture. (Fig. 17.) This section is by no means a pure effort of the imagination, for the general relation of parts is almost identical with what we actually find in the brain of the marsupial mole (*Notoryctes*); the extent of the hippocampus is exaggerated to bring it into conformity with the state of affairs found in *all* reptilian and monotreme (fœtal) brains; and the histological detail has been filled in from actual preparations of marsupial, insectivore, and reptilian brains, stained by the Golgi method. Thus we can confidently look upon this drawing (Fig. 17) as a close approximation to the actual condition of the cerebral cortex in those primitive mammals which lived just before the dawn of the tertiary period. Even in the eocene period itself certain mammals still retained a curiously reptilian-like form of brain—see, for example, the cranial cast of *Dinoceras* (D. 390 in the Physiological Series in the Museum).

The important investigations carried on by Dr. Ariëns-Kappers of Amsterdam, taken in conjunction with the work of Dr. Wallenberg and Dr. Winkler, have made it quite clear that in the optic thalamus of reptiles there is a well-developed representative of the mesial thalamic nucleus (compare Fig. 18, V″) of mammals, which is the place of termination of what I shall call the trigeminal fillet (lemniscus quinti, Lq.). On this threshold, as it were, of the cerebral hemisphere, it is quite possible that even in the reptile there may be nuclei of other sensory tracts, ready to pour their contributions into the stream of nerve fibres passing into the hemisphere. But if such nuclei exist in reptiles we as yet know little of their connexions. When, however, we turn to consider the mammalian brain we find that the optic thalamus has developed into a bunch of large nuclei, in which the ascending tracts from the trigeminal, the general tactile, visual, and auditory nerves end (see Fig. 18), and from each of which a thalamo-cortical bundle passes upward into the neopallium (Figs. 20 and 21). The mode of ending of these various tracts in the thalamus of certain small rodents (mice, guinea-pigs, &c.) has been demonstrated with the utmost precision by Ramon y Cajal.[2]

If we take the brain of one of the lowlier marsupials—as representing the most primitive and generalised form of mammal—and locate these thalamic nuclei in the brain stem (viewed in profile from the left side), they will be related the one to the other as they are represented in Fig. 18. S″ is the ventral nucleus, which Ramon y Cajal calls "núcleo-sensitivo principal,"[3] because the mesial fillet (Lm) carries to it impulses collected by the general sensory nerves (S).

The sensory path (Lq), related in a similar manner to the fifth cranial nerve (V), ends in a nucleus (V″)—n. medialis thalami—below and slightly in front of the nucleus ventralis (S″). The optic tract (II′) ends partly in the corpus geniculatum externum (II″), which is a short distance behind the nucleus ventralis; and the acoustic tract—the lateral fillet (Ll)—ends in the corpus geniculatum internum (VIII″), which is below and slightly behind the external geniculate body (II″).

I have referred to the topographical relationship of these thalamic nuclei because I believe that the original mapping out of the neopallium into areas, which are cultivated by the various sensory systems, is determined by this arrangement of the thalamus. The ascending nerve-tract which arises in each of these thalamic nuclei enters that particular part of the neopallium which happens to be nearest to it. Thus the optic and acoustic radiations originally passed directly outward[4] (Fig. 20) to their respective neopallial

[1] Lectures I. and II. were published in THE LANCET of Jan. 1st (p. 1) and 15th (p. 147), 1910.

[2] Plan de Estructura del Tálamo Optico, Report of the Fourteenth International Medical Congress, Madrid meeting, 1903, *Volume General*, 1904, pp. 277-295.

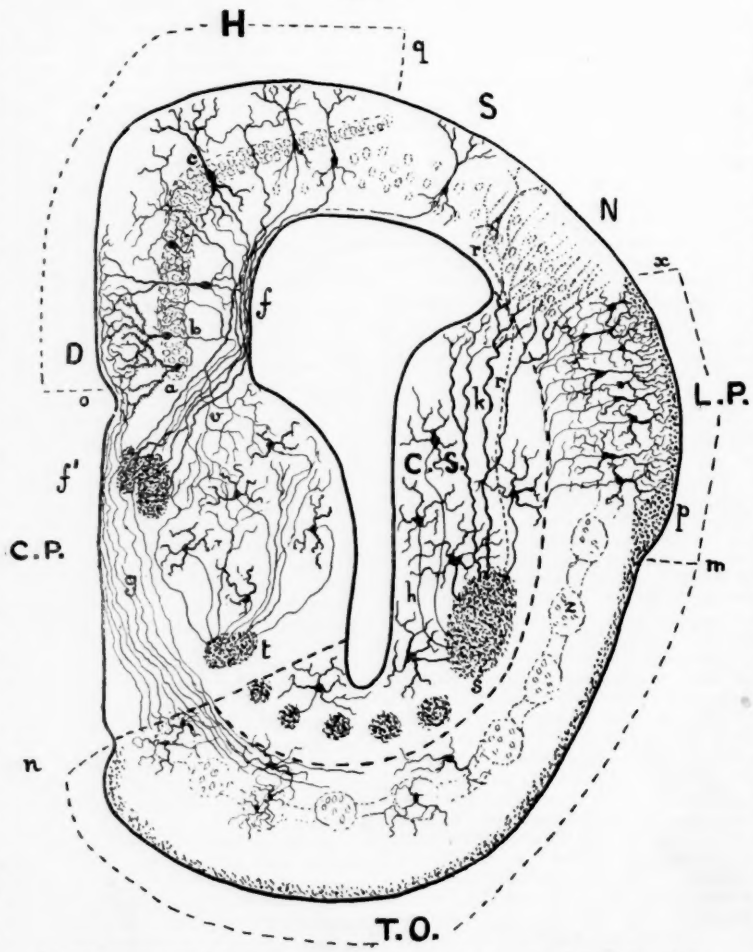
[3] Op. cit., p. 286.

[4] In this diagram the optic radiation is already bent upwards, its cortical area having been pushed dorsally by the growth of the acoustic area in response to the more recent admission of the auditory radiation into the hemisphere.

areas (II‴ and VIII‴), which at first were topographically related, the one to the other, in a manner analogous to their thalamic nuclei (Fig. 18, II″ and VIII″); but at quite an early stage of the neopallium's expansion the dorsally-placed visual centre moves backward to occupy a more caudal position than the auditory centre (Fig. 19); the latter happens to be placed in the ventral part of the neopallium, which does not move, being moored, as it were, by its proximity to, and continuity with, the basal ganglia.

For similar reasons the neopallial centre for the important "fifth nerve sense"[5]—the "oral sense" of Edinger (1908)—lies far forward at the ventral margin of the neopallium (Fig. 19, V‴) in a position opposite its thalamic nucleus (Fig. 18, V″). The general sensory area (S‴) lies above and behind the oral area (V‴) in a situation analogous to that of its thalamic nucleus (Fig. 18, S″). A coronal section (Fig. 21) through the brain of a fœtal platypus, which I have described in some detail elsewhere,[6] shows the thalamo-neopallial part (Fig. 21, V‴) of the trigeminal path with admirable clearness. The trigeminal nerve attains an enormous size in the platypus, whose snout is one of the most sensitive tactile organs found in any vertebrate, and the thalamic nucleus, in which its fillet ends, is correspondingly well developed (Fig. 21, V″). It probably is fused to the "principal sensory nucleus" (S″) of Cajal, which, however, is so overshadowed by it as not to be easily recognisable. The large thalamo-cortical tract (V‴) springing from this nucleus passes directly into the neopallial area (Fig. 21, N, Fig. 19, V‴), which happens to be placed nearest to it.

FIG. 17.



A diagram representing the essential features which a coronal section through the anterior end of the right hemisphere of a hypothetical promammal must have presented. H, The hippocampus. D, Its mesial part in process of specialisation to form the fascia dentata. *a*, Its "dentate cells." *c*, Its "hippocampal cells." *b*, An intermediate type of cell. *f*, *f'*, Fornix. C.P., The corpus paraterminale. T.O., Tuberculum olfactorium. S, The dorsal cortex (compare D in Fig. 16), now become the subiculum hippocampi. L.P., The lateral cortex of the reptile, now become the lobus pyriformis. N, The earliest rudiment of the neopallium. C.S., The corpus striatum. L.P., Lobus pyriformis.

In this way the thalamic nuclei become projected, as it were, into the neopallium, and the latter becomes mapped out into territories (Fig. 19), which (in the most primitive mammalian brain) faithfully reproduce the topographical relationships of the nuclei of the thalamus. What the nature of the anterior end of the neopallium (Fig. 19, C) may be, we do not know: it seems to be associated with the nucleus anterior thalami; and both the neopallial area and the thalamic nucleus are connected in several ways with olfactory parts of the brain. Nevertheless, electrical stimulation of this area gives rise to movements of the eyes and retraction and turning of the head.

Thus at its birth the neopallium is already mapped out into a number of well-defined territories, each of which is a receptive organ for some particular kind of sensory impression, and is already specialised in structure to perform its own peculiar functions. Within the neopallial sphere of tactile sensibility a special band (Fig. 19, H, A, L) of cortex, even in the most primitive mammals, has developed the special function of controlling the movements of various parts of the body—head (H), arm (A), and trunk and leg (L).

Somewhere in the neighbourhood of the chief ultimate termini of the paths of tactile sensibility within the central nervous system of every vertebrate we find a region which, when electrically stimulated, will excite movements in the appropriate part of the body. For example, my friend Professor W. H. Wilson of Cairo has found that stimulation of the optic lobes (superior quadrigeminal bodies) of the large Egyptian iguana produces movements of various parts of the body, and that there is a definite and precise motor localisation in the mid-brain of these reptiles—a localisation which is no doubt determined by the ending of the tactile tracts (from the body generally) in this part of the brain. In a similar manner, in the mammalian brain, when this sensory path makes its way up to the neopallium, part of the centre for tactile sensibility—the antero-mesial part (Fig. 19, H, A, L)—becomes specialised in function and differentiated in structure to form the so-called motor area.

It may be a matter of considerable significance if the motor area of the simpler and more generalised marsupials *Perameles* and *Dasyurus*, as mapped out by Dr. Chapman[7] and Dr. Flashman[8] respectively, should prove to be in reality so much smaller (compare Figs 19 and 22) than that

[5] Watson: The Mammalian Cortex, Archives of Neurology, 1907, p. 91.
[6] Quarterly Journal of Microscopical Science, 1896, Plate 11, Fig. 12.

[7] H. G. Chapman: Note on Cerebral Localisation in the Bandicoot (*Perameles*), Proceedings of the Linnean Society of New South Wales, August 29th, 1906.
[8] J. F. Flashman: A Preliminary Note on the Motor Areas in Marsupials, Reports from the Pathological Laboratory of the Lunacy Department, Sydney, 1906.

of the superficially similar eutherian hedgehog's brain, which has been studied experimentally by Dr. Gustav Mann and by Dr. and Mrs. Vogt,[9] as their respective diagrams suggest.

I do not doubt the accuracy of the results obtained independently by two such reliable observers as the Sydney investigators just mentioned; but there is no denying the fact that the mean of the results obtained in experiments on the brain of the almost equally primitive marsupial *Didelphys*, by Herrick, Ziehen, Cunningham, and the Vogts, approximates much more nearly to the localisation in the hedgehog's brain. In any case the motor area seems to have become definitely bigger in the eutherian mammal, the most primitive localisation of which is roughly represented in Fig. 19. The corresponding motor centres in *Dasyurus* (after Flashman) are shown in Fig. 22, H, A, L.

In all except the highest mammalian orders we find a striking demonstration of the important part played in the formation of the neopallium by the transformation of the skin into a highly developed tactile organ,[10] for the size of the neopallium and the weight of the brain as a whole vary almost directly (in any given order) with the extent of the surface of the body.[11] Dr. George A. Watson has called attention to the important rôle played by the tactile organs supplied by the fifth nerve in the lowlier mammals.[12] In them the cerebral cortex is a delicate instrument, the structure of which responds to every alteration in the habits of the animal. In the majority of mammals the sense of smell is most highly developed, but the cortical areas which perform olfactory functions rapidly dwindle once an animal takes to aquatic habits, or, though in a lesser degree, leaves the earth and becomes arboreal. So in other mammals the special development of one sense or another will produce a corresponding modification of the cerebral cortex.

But the neopallium is being subjected to a much more profound influence than that due to mere variations in the importance of its different sense organs. Each of the different territories devoted to the cultivation of impressions of particular senses is undergoing a process of evolution, in many respects analogous to that already noticed in the case of the reptilian hippocampus. (See Fig. 17.) At first each area is concerned with (*a*) the reception and conscious appreciation of those particular kinds of impressions, to which its connexions and its structure fit it to respond; (*b*) the blending of these impressions with those simultaneously received by other neopallial areas; and (*c*) the excitation or inhibition of lower nervous centres, so as to bring the influence of this consciousness to bear upon the behaviour of the animal.

But there develops within each neopallial area a special mechanism—the nature of which is altogether unknown to us—which confers upon it the power of acting as a recording apparatus, in which impressions can in some way be stored, so that on future occasions a new stimulation can awaken memories of foregoing states of consciousness, by means of which the latest impression can be tested and compared with others which have impinged upon this neopallial mechanism on previous occasions. In other words, each neopallial area becomes not merely a receptive organ for sensory impressions, but also an organ of associative memory.

With this double function to perform it undergoes a differentiation of structure—certain elements in each area continue to act as "receivers," which in turn transmit the impressions, no doubt modified in some way, to the second class of elements. The latter do not receive sensory impressions directly, but only through the intermediation of the former—the receivers; but in addition to "recording" the messages conveyed from the latter they perform other functions; fibres springing from them establish connexions with different areas of the same and of the opposite hemispheres, and also with other parts of the nervous system.

Thus each neopallial area in the primitive mammalian brain contains both "sensory" and "projection" elements, intermingled in much the same way as the sensory (fascia dentata, Fig. 17, *a*) cells and projection (hippocampus, Fig. 17, *c*) cells are mixed in the reptilian hippocampal formation. But just as the latter, during the process of evolution of the mammal, becomes separated into two parts, one becoming essentially if not wholly sensory (the fascia dentata), the other a projection-area (hippocampus *sensu stricto*), so each of the neopallial areas becomes transformed into a central "sensory" part and a peripheral "projection" part. In Fig. 27 A.S. is the centrally placed visuo-sensory cortex, and A.PA. and A.PE. are peripheral bands of association (visuo-psychic) cortex fringing it.

The different sensory areas, which were originally coterminous, thus become separated the one from the other by a double series of "projection" (or "association") areas, i.e., one or more developed at the periphery of each of the two previously coterminous regions.

Now while there is a limit to the extent to which the "sensory" areas grow—a limit, however, subject to a wide range of variation in different mammalian orders—there is apparently no restriction to the possibilities of extension of the "association" or "psychical" areas. The visuo-sensory area (Fig. 27, A.S.) of the human neopallium—i.e., the region which receives fibres of the optic radiation direct from the lateral geniculate body, is no bigger than that of a monkey with equally large optic nerves. I measured the superficial extent of the visuo-sensory area (area striata) in 24 (12 pairs) human hemispheres and found the average to be almost exactly 3000 square millimetres. In a small *Cercopithecus* it was 1700, a *Macacus* 2000, a small baboon 2400 square millimetres; while a large baboon or an anthropoid ape may have a visual (sensory) cortex as large as a man's.

Thus, we can take it that the superiority of the human, over the ape's, brain as a psychical organ must be the result mainly of the higher development of the "association" areas. This must be true even if we admit the possibility—for as yet we have no positive proof—that the relatively hairless skin of man is a much more efficient tactile organ, and perhaps has associated with it a larger tactile sensory area in the neopallium, than that of the hairy ape.

Interesting as these problems are, I must leave them at this stage and turn to consider some of the effects of this process of neopallial expansion and differentiation to which I have thus briefly referred. I choose for consideration that particular aspect of neopallial morphology to the study of which your museum is so admirably adapted—namely, the manner of folding of the cortex to form sulci and convolutions.

In the course of its growth the neopallium does not increase in thickness beyond a certain point; its expansion is attained almost wholly by an addition to its superficial extent. This is no doubt due to the consideration that an increase in thickness would necessitate larger blood-vessels to reach the whole depth of the cortex; and the pulsation in such large vessels would be a disturbing factor to the delicate cortical mechanism. To obviate this the cortex remains thin and its expansion is expressed wholly as an increase in the extent of its surface. The result of this is that at an early stage the pallium becomes folded. The first fissure to appear is the hippocampal, which is *sui generis*. Next in order is the rhinal (Figs. 19, 22, and 27, *f. r.*), which is a folding of the cortex along the line separating the lobus pyriformis (L. P.) from the neopallium (N.). These two cortical areas differ in structure and function and expand at different rates in the course of their growth. Hence this furrow develops along the boundary-line.

The hippocampal fissure is found in every mammalian brain and the rhinal fissure in some members of every order and the vast majority of individuals. But there are a considerable number of mammals in which the neopallium is smooth.

When folding of the cortex begins, the earliest neopallial sulci are formed in a manner analogous to that just mentioned in the case of the rhinal fissure—i.e., sulci appear along the lines of separation of the functional areas, which I have already described (Fig. 19). Even in some of the lowliest marsupials a folding (Fig. 23, *s. c.*) of the mesial part of the neopallium occurs along the boundary between the visual area (A.S.) and the subiculum hippocampi (S.). This is the most primitive form of the calcarine sulcus—being strictly homologous with the so-called "stem" of the human calcarine (Fig. 27, *s. c.*)—and it indents the whole

[9] C. and O. Vogt: Zur Kenntnis der electrisch erregbaren Hirnrinden-Gebiete bei den Säugetieren, Journal für Psychologie und Neurologie, 1907.

[10] My friend, Professor J. P. Hill, had come quite independently to the same conclusion.

[11] Eugen Dubois: Sur le Rapport du Poids de l'Encéphale avec la Grandeur du Corps chez les Mammifères, Bulletins de la Société d'Anthropologie, 1897.

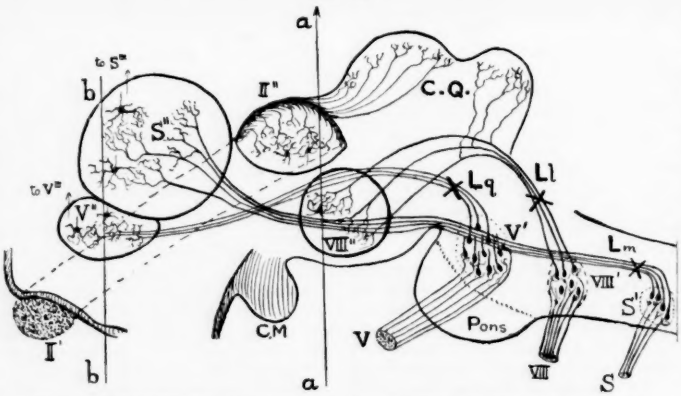
[12] Archives of Neurology, 1907.

thickness of the neopallium, so as to produce a swelling, the calcar avis (hippocampus minor), in the cavity of the lateral ventricle.[13] The realisation of this fact sheds a curious light upon the heated controversy of the years 1857–1862, to which I referred in my first lecture,[14] for Sir R. Owen wanted to exalt as the chief distinctive character of the human brain and the main objection to the adoption of Darwin's theory this feature which we now find in the lowliest mammals!

Contemporaneously with the appearance on the mesial surface of the calcarine sulcus a small furrow (which in the catalogue I have called "orbital") develops on the outer aspect of the front end of the hemisphere (Fig. 22, *s. o.*). It forms the caudal boundary of the area labeled C in Fig. 19, separating it from the motor area (H and A). A large number of lowly marsupials, insectivores, chiroptera, and even the smaller representatives of higher orders, have either no neopallial sulci at all or only calcarine and orbital (or one or other of these).

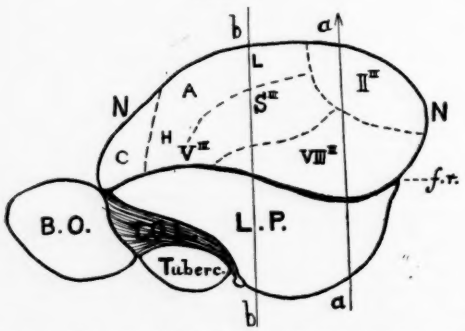
But a third neopallial sulcus soon makes its appearance along the line of separation of the auditory (Fig. 19 VIII‴) and sensory (s‴) areas. This is

FIG. 18.



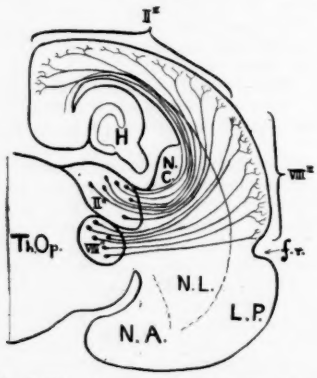
Scheme of the primitive arrangement of the thalamic nuclei in the lowliest mammals and the tracts passing to them; seen from the left lateral aspect. V, Trigeminal nerve. V′, Its terminal nucleus in the pons. Lq, The lemniscus quinti, crossing at X and passing to the thalamic nucleus V″. S, The posterior root of a cervical nerve. S′, The nucleus cuneatus. Lm, The mesial fillet crossing at X and proceeding to the thalamic nucleus S″. VIII, The cochlear nerve. VIII′, The tuberculum acusticum. Ll, The lateral fillet, crossing at X, and passing to the corpus geniculatum internum VIII″. II′, The optic tract proceeding to the corpus geniculatum externum II″. C.M, The corpus mammillare. *a a*, The plane of the section shown in Fig. 20. *b b*, The plane of the section shown in Fig. 21.

FIG. 19.



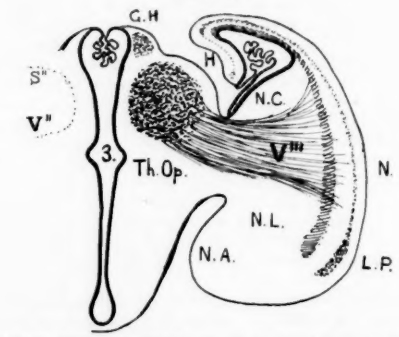
A map of the cortical territories in a primitive mammal (left lateral aspect of hemisphere). II‴, The visual area. VIII‴, The auditory area. s‴, Tactile area. V‴, The trigeminal tactile area. H, A, L, The motor area; H, Head; A, Arm; L, Leg. L.P., Lobus pyriformis. T.O.L., Tractus olfactorius lateralis. Tuberc., tuberculum olfactorium. B.O., Bulbus olfactorius.

FIG. 20.



Scheme of primitive arrangement of the cortical visual (II″ to II‴) and auditory (VIII″ to VIII‴) paths, seen in a hypothetical section cut in the plane *a a* (Figs. 18 and 19). Th.Op., Optic thalamus. H, Hippocampus. N.C., Caudate nucleus. N.L., Lenticular nucleus.

FIG. 21.



A section across the right side of the forebrain of a fœtal platypus—in a plane analogous to that indicated in Figs. 18 and 19 by the lines *b b*. V‴, The cortical tactile path, passing from the combined trigeminal and general sensory nucleus (V″ and S′) in the thalamus to the neopallium. N. G.H., Ganglion habenulæ; 3, third ventricle.

FIG. 22.

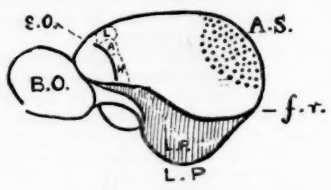
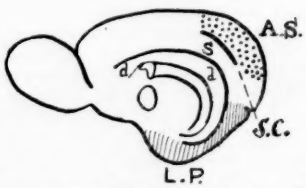


FIG. 23.



FIGS. 22 AND 23.—The lateral aspect of the left and the mesial aspect of the right hemisphere in *Dasyurus*. A.S., Area striata (visual cortex). *s.c.*, Sulcus calcarinus. S., Subiculum hippocampi. H, A, L, Motor area (after Flashman). S.O., Sulcus orbitalis.

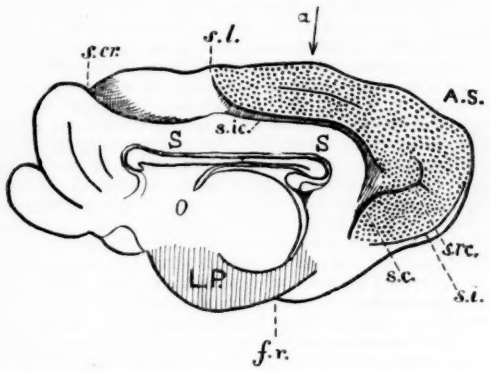
[13] See Catalogue of the Physiological Series of the Museum, Fig. 49, p. 167.

[14] THE LANCET, Jan. 1st, p. 3.

the most primitive form of the suprasylvian sulcus. Whether or not the "lateral" (or "corono-lateral") sulcus *in its most primitive form* (i.e., *not* the "lateral" as we find it in carnivores, ungulates, and lemurs) is developed as a boundary between the sensory (S''' + V''') and motor (L + A + H) areas is not yet known for certain.

At a somewhat later stage in the evolution of the mammalia (in carnivora, ungulata, and especially primates)

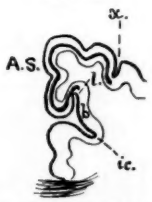
FIG. 24.



a furrow develops along the lateral edge of the visual cortex (Fig. 19, II'''; also Fig. 25, *x*—A.S. being the visual area). It represents the first phase of that peculiar depression which reaches its highest (or most obtrusive) development in the apes, and has been supposed to be so peculiarly distinctive of them that it is commonly known as the "Affenspalte." It is now known to occur in a much wider range of mammals, including man, in whose brain a definite sulcus lunatus, as I have called this furrow, can usually be found in each hemisphere.

Another primitive sulcus is that (Figs. 24 and 25, *s.ic.*) which develops along the peripheral boundary of the subiculum (using that term in the peculiar sense defined in the second lecture); this is the sulcus cinguli (callosomarginalis).

FIG. 25.



FIGS. 24 AND 25.—The mesial aspect of the right hemisphere of an Egyptian "mongoose" (*Herpestes*), and part of a transverse section made at the point *a*. A.S., Area striata.

When you recall the facts which I was discussing immediately before we turned to the consideration of the cerebral sulci—namely, that the differentiation of the primitive neopallial districts (Fig. 19) to form "association areas" affects the peripheral parts of these districts most of all—you will realise how important must be the effect of those evolutionary processes on the sulci, which develop originally, as we have just seen, as the peripheral boundaries of these districts—i.e., at the seat of greatest disturbance during the subsequent growth of the cortex. As the edges of the primary sensory areas (Fig. 19) become specialised to form new cortical territories (compare Fig. 27), and these begin to expand, new furrows develop to accommodate the growing neopallium, and the old furrows take on new forms or give place to others produced by new methods of folding. Thus the problem of determining the homologies of sulci becomes one of very great complexity. A specific example will make the nature of these difficulties more intelligible.

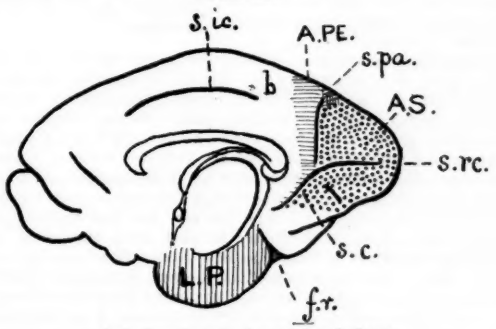
The visual cortex in all mammals has a well-defined structure, for in all except the smallest species a very distinct white line (the stria described by Gennari)[15] plainly visible to the naked eye, serves to distinguish this region, which for convenience of description I have called the area striata. In most mammals a furrow develops at its mesial edge (Figs. 23 and 24, *s.c.*)—the anterior limb of the calcarine sulcus (s. calcarinus proprius); another furrow (Fig. 24, *s.rc.*) is formed in many mammals, and especially in primates, by the axial folding of the area striata itself—the posterior limb of the calcarine sulcus (s. retrocalcarinus). In all primates (Figs. 26 and 27), and occasionally in other orders (Fig. 24), the sulcus calcarinus (*s.c.*) and the s. retrocalcarinus (*s.rc.*) become confluent. In many mammals furrows develop at the other margins of the area striata—above (or in front), sulcus suprastriatus (Figs. 24, *s.l.*, and 26, *s.pa.*); laterally, sulcus lunatus; and below, sulcus infrastriatus (Fig. 24, *s.i.*).

When the periphery of the visual cortex becomes specialised to form an association area (peristriata, Fig. 27, A.PE.), and even when the process is repeated to differentiate the area parastriata (A.PA.) the sulcus calcarinus (*s.c.*) and the sulcus retrocalcarinus (*s.rc.*) are not affected—at any rate, directly—by these events.[16] But the suprastriate, lunate, and infrastriate sulci are situated in the midst of the sites of this specialisation and active growth; what happens to them amidst such disturbances?

After the process of specialisation has been completed (in the human brain) we find dorsal and ventral limiting sulci at the margins of each cortical area (Fig. 27). For example, there is a sulcus limitans dorsalis areæ striatæ (*s.l.*), an s.l.d.a. parastriatæ (s. occipitalis paramarginalis, *s.p.*), and an s.l.d.a. peristriatæ (s. paroccipitalis, the caudal extremity of the intraparietal). The difficulty in determining the homologies of sulci arises in this way. In a mammal in which the parastriate area (A.PA.) has not been differentiated from the striate (A.S.) the limiting sulcus would be termed "striatæ," because it marks the boundary of the region containing Gennari's line: but, when the edge of the latter area becomes altered in structure and becomes parastriate, the same furrow which was called s.l.a. striatæ (in Fig. 27, *s.p.*) becomes s.l.a. parastriatæ, and a fresh furrow (*s.l.*) develops at the *new* edge of the striate area, to which we not unnaturally apply the *old* name s.l.a. striatæ. The same process has already occurred in the case of the limiting furrow of the peristriate area. Thus, for example, the original boundary sulcus of the visual area on its dorsal aspect is the paroccipital (*s.o.*), the second is the paramesial (*s.p.*), and finally it becomes, and remains, the sulcus limitans dorsalis areæ striatæ (*s.l.*).

Stated in these terms the facts become quite clear and the paradox is explained that a sulcus, which lies at the margin of a definite histological formation (*s.l.* in Fig. 24) in one brain, may be strictly homologous with a furrow in another brain (*s.o.* in Fig. 27) which is far removed from the edge of the cortical area presenting the same histological appearance, *because the intervening area* (A.PE. and A.PA.) *has become transformed in structure.* Thus, *s.l.* in both Figs. 24 and 27 is the limiting sulcus of the area striata, although *s.l.* in Fig. 24 is strictly homologous with *s.o.* in

FIG. 26.



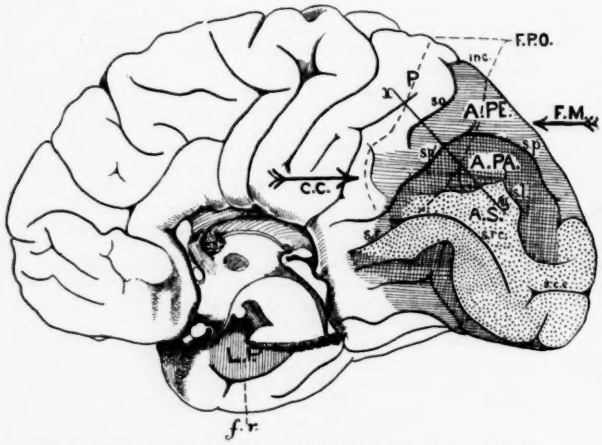
A similar view of a lemur's hemisphere.

[15] De peculiari structura cerebri, Parma, 1782, p. 74—"albidiorem lineolam vidi primum die 2 Februarii, anno 1776."

[16] New Studies on the Folding of the Visual Cortex and the Significance of the Occipital Sulci, Journal of Anatomy and Physiology, 1907, p. 198.

Fig. 27. The failure to understand this essentially simple principle is responsible for most of the hasty and shallow criticisms, which abound in the current literature relating to the interpretation of cerebral sulci.

FIG. 27.



The mesial aspect of the right cerebral hemisphere of the (practically) acallosal brain of an Egyptian fellah woman. A.S., Area striata. A.PA., Area parastriata. A.PE., Area peristriata. The three dorsal limiting furrows of these areas: *s.l.*, *s.p.*, and *s.o.* The other features explained in the text.

On analysing the operation of these factors many irregularities occur which add to the confusion. In the first place, when the periphery of a sensory area becomes specialised to form a fringe of a different structure, the newly developed furrow—i.e., the sulcus formed at the *new* edge of the old area—may be deeper than the *old* furrow at the original edge; or the latter may even disappear entirely, so that the new sulcus may be mistaken for the old, which has disappeared. (See, for example, Fig. 26, the old sulcus at the edge of A.PE. has disappeared, and the new sulcus, *s.pa.*, is at the new edge of A.S.) The confusion becomes the greater and the more paradoxical when I add that the new sulcus, which may thus simulate the old (in its relationship to the cortical area presenting the structure of the original sensory area) may further resemble it in its topographical position. When the edge of a cortical area (take, for example, the visual or striate) becomes specialised as an association area (peristriate) there is no reason why the sensory part (striate) should be diminished in size; in other words, an equally large sensory or receptive area is just as necessary as it was before; hence the striate area increases in size as it specialises, so that even after budding off the peristriate cortex it may regain its old dimensions, or, perhaps, we can say that the visuosensory area remains stationary in size, even though it is extruding elements to form the new association area (A.PE. in Fig. 26). Thus it happens that the *new* boundaries of the striate area may be in the same situation as the *old*, although the actual frontiers of the territory *homologous to the original striate area* may have been pushed far beyond this situation, the outlying part having been specialised to form the peristriate cortex (see Fig. 26).

The mode of packing of visual cortex may be used to illustrate several other factors which add to the difficulty of interpreting the homologies of sulci.

Certain mechanical factors play an important rôle in moulding the form of the brain. For example, in a normally developing human brain the posterior end of the corpus callosum is partly formed of fibres (forceps major) which are attached to the caudal poles of the hemispheres, and, as growth proceeds, the resistance to elongation of these fibres would tend to pull the corpus callosum backwards (Fig. 27, C. C.), or the cortex, to which the forceps major is fixed, forwards (F.M.). The latter cannot happen, but the former does, to some extent—i.e., the corpus callosum becomes elongated backward, and it thrusts its splenium against the rapidly expanding visual cortex. It is this mechanical process which is responsible for the formation of the great parieto-occipital depression. In acallosal human brains (Fig. 27) both the backward thrust of the corpus callosum (C. C.) and the restraining influence of the forceps major (F. M.) are lacking; the visual cortex is free to expand. No parieto-occipital fossa develops. But in its place strips of parastriate (A.PA.) and peristriate (A.PE.) cortex lie exposed upon the surface, bounded by prolongations of their dorsal limiting sulci (*s.p'.* and *s.o.*); in other words, the area (enclosed in Fig. 27 by a broken line F.P.O.) which in the normal brain becomes buckled inwards so as to engulf parts of the area parastriata, area peristriata, and the precuneus (P.)—compare Fig. 28, representing a section cut in the line corresponding to *xy* (Fig. 27) in a normal brain—in the large parieto-occipital fossa (Fig. 28, *f.po.*), here (Fig. 27) lie exposed upon the surface. Other examples might be cited of the influence of mechanical factors in moulding the Sylvian region and determining the arrangement of the furrows around the caudal pole of the hemisphere.

A curious type of furrow formation is seen in the evolution of the sulcus lunatus ("Affenspalte"). In its primitive form (many South American apes and lemurs) it is a simple sulcus (analogous to *x* in Fig. 25), forming the anterior limit of the area striata on the lateral aspect of the hemisphere. But when the affenspalte assumes its most typical form (Fig. 29) the deep fossa (S.LUN.) is composed of the invaginated para- (A.PA.) and peristriate (A.PE.) cortex, the striate area (A.S.) itself forming the surface of the operculum, which overhangs it.

I shall refer only to one other illustration of the factors which determine the form of the neopallium, but it is one which, if properly understood, will dispose of many difficulties in the interpretation of the morphology of sulci.

I have already explained that neopallial sensory areas, which are coterminous in the lowlier mammalia, may become widely separated, the one from the other, in the more highly developed orders by wide stretches of "association" area. The failure to take this fact into consideration has inspired

FIG. 28.

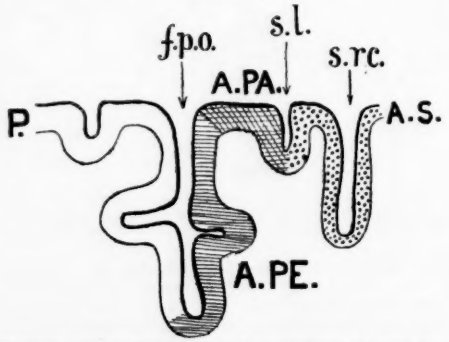
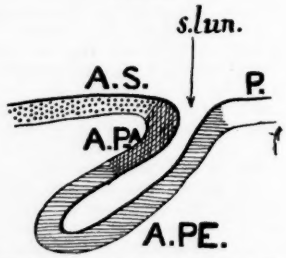


Diagram representing the actual arrangement of areas in a normal brain in a section cut in a plane analogous to *x y* in Fig. 27. *s.rc.*, The calcarine sulcus (its posterior or retrocalcarine part). *f.p.o.*, Fossa parieto-occipitalis. P., Precuneus.

FIG. 29.



Horizontal section through a well-developed sulcus lunatus (*s.lun.*) in a human brain. References as in Figs. 27 and 28, except P., which is the parietal area.

many plausible but mistaken arguments concerning the homologies of sulci. Certain writers have adversely criticised my reference to the cingular sulcus in the carnivora (Fig. 24, *s.ic.*) as the boundary of the gyrus cinguli, s, on the ground that it is a limiting sulcus of the area striata (Fig. 24, A.S.); but in the primitive mammal it may be the limiting sulcus of both—i.e., the line of separation between them. Even when a strip of "association area" develops (as it does in the carnivora, Fig. 25, *b*), to separate the two originally coterminous districts, they may still seem to be separated the one from the other merely by a simple furrow, *when examined superficially* (Fig. 24, *s.ic.*), because the "association area" (*b*) and its two limiting sulci (Fig. 25, *l.* and *ic.*) may be quite submerged in a fossa. This case is an admirable illustration, not only of one of the pitfalls to which superficial criticism is liable, but also of the manner in which a simple interterritorial boundary-sulcus may be converted into two limiting furrows, when the two territories become separated by an "association area" (*b*), which at first may be submerged, though later (Fig. 26, *b*) it comes to form part of the actual surface.

This brief account of some of the difficulties which complicate the problem of homologising sulci will have made it clear to you that we are still far from a satisfactory interpretation of the configuration of the mammalian neopallium. It will be readily understood that the account of the convolutions of the brain which I wrote for the catalogue of this Museum ten years ago was of a tentative nature, for at that time the complexity of the problems to be solved was not realised: in fact, it was that work which suggested the need for fresh methods of unravelling the complicated network of causal factors, some of which I have laid before you to-day.

I have already explained to you how misleading the inferences as to the homologies of sulci may be when based solely upon the evidence of the structure of the cortex, even when the histological survey is quite accurate and beyond reproach—a description which can be applied to no published work that I am acquainted with, except the excellent series of memoirs by Dr. K. Brodmann, published in the *Journal für Psychologie und Neurologie*. But there are certain factors which almost all those who have devoted themselves to the study of histological localisation have ignored: (1) the variability in the relationship of sulci to the neopallial areas, the growth of which is unquestionably the causal agent in their production; and (2) the rarity of the *exact* topographical coincidence of a sulcus and the edge of an area to which it is genetically related.

If, in a large series of brains, one examines the relationship of a limiting sulcus to the margin of the area which it bounds, it will be discovered that in most cases the distinctive cortical structure does not stop *precisely* at the bottom of the furrow, but in some instances goes a few millimetres beyond, and in others ceases a few millimetres before, it reaches that point. Yet the evidence afforded by the whole series can leave us in no doubt as to the causal relationship between the sulcus and the edge of the cortical area. The histologist, who laboriously reconstructs the topography of a hemisphere from a multitude of serial sections, usually can find time to examine only one or two examples of a particular species of animal; and, if he finds that a particular area extends slightly beyond, or does not quite reach, a particular sulcus, he is apt to deny the causal relationship between the two, quite forgetful of the fact that the growing cortex is a plastic material, and that the forces which mould it are apt to be applied in a diffuse manner, so that the folding does not take place with that mathematical precision which the histologist seems to expect and demand.

Thus, for example, even such a careful and painstaking investigator as Brodmann refuses to admit the identity of the dorsal segment of the sulcus centralis in the lemur's brain (the homology of which has been placed beyond all possibility of doubt by the researches of Dr. Page May, Dr. Gordon Holmes, Dr. W. H. Wilson, and myself) simply because the motor area reaches beyond it to the extent of *one millimetre in a thrice magnified plan*.[17] If Dr. Brodmann expects Nature to work to a degree of accuracy within a range of one-third of a millimetre in the operations of neopallial folding, then he must renounce all idea of homologising any sulci whatsoever.

Mr. President, in these three lectures I have done little more than clear from the path some of the obstructions which stand in the way of a fuller comprehension of the mysteries of cerebral architecture; but if, in doing so, I have called attention to the value and importance of the material in one corner of your Museum I have not laboured in vain.

[17] K. Brodmann: Beiträge zur histologischen Lokalisation der Grosshirnrinde, Journal für Psychologie und Neurologie, 1908, p. 332 and Fig. 30

FOUR CASES OF CONGENITAL ACHOLURIC (SO-CALLED "HÆMOLYTIC") JAUNDICE IN ONE FAMILY.

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THE following examples of congenital and familial acholuric jaundice belong obviously to the same class as those recently described in England by H. P. Hawkins and L. S. Dudgeon,[1] R. Hutchison and P. N. Panton,[2] and F. J Poynton and W. L. Scott.[3] Amongst earlier English cases those of W. Moxon,[4] Claude Wilson,[5] Sir Thomas Barlow and H. Batty Shaw,[6] J. A. Arkwright,[7] W. T. Cocking,[8] and H A. Mason[9] (Mason's patient was, however, the only jaundiced member of her family) probably belong to the same class. So also do the cases recorded in the German language by O. Minkowski,[10] Bettmann,[11] Alois Pick,[12] H. von Krannhals,[13] Claus and Kalberlah,[14] E. Benjamin and E. Sluka,[15] and R. Pollak.[16] Here likewise belong many of the cases of congenital or family splenomegalic cholæmia described in France by A. Gilbert and his pupil P. Lereboullet,[17] Widal and Ravaut,[18] Lortat-Jacob and Sabaréanu,[19] &c.; possibly also some of the cases without clinically obvious enlargement of the spleen. Since A. Chauffard's[20] well-known work on the subject most French cases have been published under the heading Congenital or Familial "Hæmolytic Icterus."[21]

[1] Hawkins and Dudgeon: Quarterly Journal of Medicine, Oxford, 1909, vol. ii., p. 172. Includes many references to the literature of the subject.

[2] Hutchison and Panton: Ibid., vol. ii., p. 432.

[3] Poynton and Scott: Transactions of the Medical Society of London, 1909, vol. xxxii., p. 381. See also Poynton, THE LANCET, Jan. 15th, 1910, p. 153.

[4] Moxon's cases of hereditary jaundice were described by Charles Murchison in his book on Diseases of the Liver (third edition, 1885, p. 481), and by G. Harley (Diseases of the Liver, 1883, p. 300). The later history of the same family (including Moxon's cases) has been quite recently published by R. Hutchison and P. N. Panton (loc. cit.).

[5] Claude Wilson: Transactions of the Clinical Society of London, 1890, vol. xxiii., p. 162, and 1893, vol. xxvi., p. 163.

[6] Ibid., 1902, vol. xxxv., p. 155.

[7] J A. Arkwright: Edinburgh Medical Journal, 1903, new series, vol. xiii., p. 52.

[8] Quarterly Medical Journal, Sheffield, 1903, vol. xi., p. 40.

[9] Ibid., 1903, vol. xi., p. 104.

[10] Minkowski: Verhandlungen des Congresses für innere Medicin, Wiesbaden, 1900, Band xviii., p. 316.

[11] Bettmann: Münchener Medicinische Wochenschrift, 1900, Band xlvii., p. 791.

[12] Alois Pick: Wiener Klinische Wochenschrift, 1903, Band xvi., p. 493.

[13] Krannhals: Deutsches Archiv für Klinische Medicin, Leipzig, 1904, Band lxxxi., p. 596.

[14] Claus and Kalberlah: Berliner Klinische Wochenschrift, 1906, Band xliii., p. 1471.

[15] Benjamin and Sluka: Ibid., 1907, Band xliv., p. 1065.

[16] Pollak: Wiener Medicinische Wochenschrift, 1908, Band lviii., p. 1489.

[17] See especially the cases collected as examples of Ictère chronique splénomégalique, by P. Lereboullet, Les Cirrhoses Biliair s, Paris, 1902, pp. 447–464.

[18] F. Widal and P. Ravaut: Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris, third series, 1902, vol. xix., p. 984.

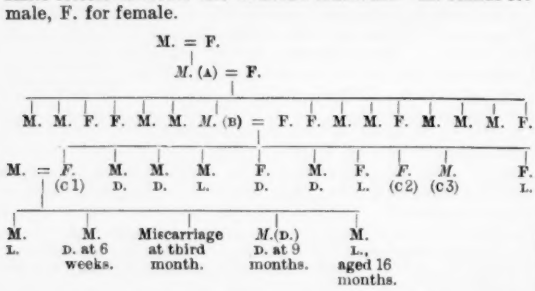
[19] L. Lortat-Jacob and G. Sabaréanu: Revue de Médecine, Paris, 1904, vol. xxiv., p. 310.

[20] See especially A. Chauffard: Pathogénie de l'Ictère Congénital de l'Adulte, Semaine Médicale, Paris, Jan. 16th, 1907, p. 25.

[21] On the whole subject of congenital and acquired hæmolytic jaundice see especially Widal, Abrami, and Brulé, Les Ictères d'Origine Hémolytique, Archives des Maladies du Cœur, &c., Paris, 1908, vol. i., pp. 193–231; Vaquez and Aubertin, Sur l'Anatomie Pathologique de l'Ictère hémolytique, Ibid., 1908, vol i., pp. 609–623; Renaux and Verhoogen, Ictère Hémolytique Congénital avec Splénomégalie, Société des Sciences Médicales et Naturales de Bruxelles, July 5th, 1909 (Presse

Our patients are: (1) a man (B), aged 53 years; (2) his married daughter (C 1), aged 32 years; (3) another daughter (C 2), aged 14 years; and (4) a son (C 3), aged 12 years. Beyond the scabies, for which they all first came under our attention, and the signs and symptoms connected with their peculiar kind of jaundice, there is little that need be said about them. They all appear fairly well nourished and normally developed in body and mind. The father (B) has a pigmented scar on his right leg from ulceration due to an injury. The boy (C 3), the least jaundiced of the four, has slight enlargement of some of his cervical lymphatic glands and a scar on the neck left by an operation on lymphatic glands. The girl (C 2), who was for a considerable time under our observation as an in-patient, occasionally during that period had slight fever (at one time up to 99° or 100° F.). In none of the patients was there any clubbing of the fingers. In all the cases, unless otherwise stated, the various examinations were carried out by Dr. Dorner.

Family history.—The father (B) of the other three patients tells us that he is one of a family of 15 children, eight of whom are still living, and that he is the only jaundiced one out of all the 15. His father (A), however, was jaundiced all his life, sometimes looking very yellow, sometimes less so. He died at the age of 70 years as a result of ulceration of the leg. The paternal grandfather and grandmother of the man (B) are said not to have been jaundiced. Of B's ten children (six living, four dead) only three—namely, our above-mentioned three patients—inherited the jaundice. Of these three, the married daughter (C 1), the eldest of his children, has had herself four children, one of whom is said to have been yellow and to have died ("anæmia") when 9 months old. In the accompanying genealogical table the italic letters indicate the affected members. M. stands for male, F. for female.


M. = F.
M. (A) = F.
M. M. F. F. M. M. M. (B) = F. F. M. M. F. M. M. M. F.
M. = F. M. M. M. F. M. F. F. M. F.
(C 1) D. D. L. D. D. L. (C 2) (C 3) L.
M. L.
M. D. at 6 weeks.
Miscarriage at third month.
M. (D.) D. at 9 months.
M. L., aged 16 months.

We confess that we are not quite satisfied as to the correctness of this family history, and should not be surprised to find that some of the brothers and sisters of B showed slight remittent or intermittent jaundice and a certain degree of splenomegaly.

The jaundice.—This symptom, which appears to have been congenital in the four patients, is as well marked in the skin of the body and the mucous membrane of the mouth as in the ocular conjunctiva. At present it is least noticeable in the boy (C 3), and very distinct, though not very deep, in his two sisters (C 1 and C 2),[22] and in their father (B). The degree of yellowness varies occasionally from time to time, and is apparently deeper when they catch cold. The father (B) says that he is yellower in winter than in summer, and that he feels weak and depressed during the exacerbations of the jaundice. His eldest child (C 1) says that her jaundice was increased during every pregnancy and whenever she caught cold. In none of the four cases has there been icteric pruritus or any xanthomatous change in the skin, such as is so often present in cases of chronic obstructive jaundice.

The spleen and liver.—The spleen can be felt abnormally hard below the costal margin and is decidedly enlarged in all four cases. In the father (B) and the girl (C 2) the lower edge is three fingers' breadth and in the married daughter (C 1) four fingers' breadth below the costal margin, but in the boy (C 3), although the area of the splenic dulness is distinctly in excess of the normal, the organ can only just be palpated below the ribs. The liver is slightly, if at all, enlarged. The lower edge can be felt just below the ribs in the father (B), the girl (C 2), and the boy (C 3), but not in the married daughter (C 1). There was never an attack resembling biliary colic in any of the cases, even during the exacerbations of the jaundice; and altogether there is no evidence pointing to any form of cholelithiasis, although on one occasion in the case of the father (B) during an exacerbation of the jaundice the fæces were said to be temporarily pale.

The fæces.—In the girl (C 2), whilst under observation in the hospital, the fæces were always normally coloured and very rich in urobilin (alcohol extraction, and in fresh fæces the perchloride of mercury test). So they have apparently generally been in the other patients, though on one occasion, as already stated, during an exacerbation of jaundice the father says that his motions became temporarily colourless.

The urine.—This has been examined in all four patients, and the only points to be noted are that in all of them it is of rather high colour, generally free from bilirubin but always containing abundance of urobilin (spectroscope and chemical tests) and urobilinogen. Occasionally, however, a very slight reaction for bilirubin was obtained.

Blood pressure.—The brachial systolic blood pressure in the father (B) was 115 millimetres Hg; in the married daughter (C 1) 115 millimetres Hg; in the girl (C 2) 125 millimetres Hg; and in the boy (C 3) 105 millimetres Hg.

THE BLOOD.

Colour of the blood serum.—In all four cases the blood serum was decidedly of an abnormal yellow colour and contained bile pigment (kindly tested by Mr. L. S. Dudgeon[23]), but in none of the cases could the presence of urobilin be established by spectroscopic and ordinary chemical examination (Dr. Dorner).[24]

The results of ordinary blood counts and differential counts are recorded in the accompanying tables. Microscopic examination of the fresh blood in these cases showed well-formed red cells, which, in a closed chamber, with few exceptions, retained their round contour (that is to say, did not become shrivelled and stellated or crenated in outline) for a long time; a "fresh" preparation from the girl (C 2) examined again after three days was found to show little change in the red cells, only an occasional one here and there having become crenated. For the special characteristics of the red cells, as seen in stained blood films, see the remarks in Dr. A. E. Boycott's report. Dr. Boycott kindly made blood counts (Nov. 30th, 1909) in all four patients and obtained the results expressed in Table II.

Dr. Boycott wrote that besides the details recorded in this table the most important features to note are: (1) abundant punctate basophilia in the red cells; (2) fairly frequent polychromatophilia; and (3) slight variation in shape and great variation in size of the red cells. The cells that are abnormal in size are too small. In the father (B) the ten largest cells averaged only $7 \cdot 2\mu$, the ten smallest $4 \cdot 6\mu$; in the boy (C 3) the corresponding figures were $5 \cdot 8\mu$ and $4 \cdot 1\mu$. Fig. 1 is a drawing to scale showing the outlines of the red cells in the father (B), and Fig. 2, drawn to the same scale, shows the red cell outlines in the boy (C 3). In Fig. 1 some of the cells are dotted to indicate the presence of punctate basophilia. The blood changes are most marked in the man (B), but are clear enough in the other three patients. Dr. Boycott calls attention to the high colour (denseness) of some of the red cells, a feature best marked in the boy (C 3), in whom the smallness of the red cells is specially noticeable.

The viscosity of the blood and blood serum.—This was estimated by Determann's viscosimeter[25] and the results are

Médicale, Paris, Sept. 25th, 1909, p. 680), and Renaux, Journal Médical de Bruxelles, 1909, No. 28, p. 440. In regard to acquired cases see also the recent German accounts by H. Strauss, Ueber erworbenen Formen des Chronischen Acholurischen Icterus mit Splenomegalie, Berliner Klinische Wochenschrift, 1906, Band xliii., p. 1590; and S. Möller, Ueber Chronischen Acholurischen Icterus mit Splenomegalie, ibid., 1908, Band xlv., p 1639; see also F. P. Weber, Acquired Chronic Acholuric Jaundice, American Journal of the Medical Sciences, 1909, vol. cxxxviii., p. 24.

[22] When C 2 was seen on Jan. 3rd, 1910, the jaundice had almost completely disappeared.

[23] According to Dudgeon bile pigment is present only in the serum of patients obviously jaundiced or in whom jaundice is just going to appear (see also later on).

[24] Dr. Dorner suggests that special chemical methods with larger quantities of blood serum might perhaps give a positive result in this respect (but see later on).

[25] See Determann, Ein einfaches ..... Blutviskosimeter, Verhandlungen des Kongresses für Innere Medicin, Wiesbaden, 1907, Band xxiv., p. 533.

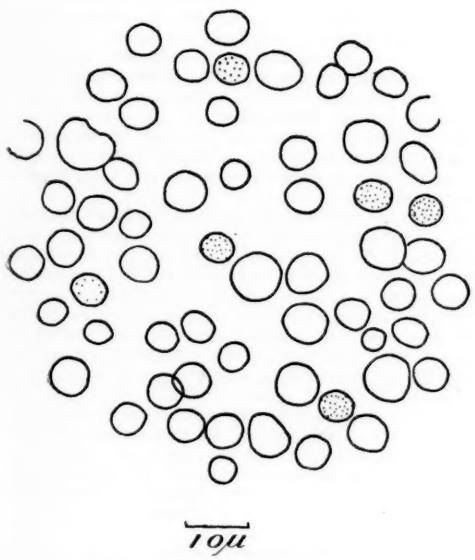
TABLE I.—*Showing the Results of Blood Counts made at the German Hospital.*

—	Red cells per cubic millimetre of blood.	Hæmoglobin per cent. (Sahli's and Haldane's methods).	Colour index.	White cells per cubic millimetre of blood.	Differential count of white cells per cent.						Remarks.
					Neutrophile polymorphonuclears.	Small lymphocytes.	Large lymphocytes.	Intermediates.	Eosinophiles.	Mast cells.	
Father (B), (1) Oct. 25th	4,826,660	85	0·88	14,000	70·0	21·0	5·0	—	2·0	1·0	On this occasion the nucleated red cells (normoblasts) were counted amongst the white cells and constituted 1 per cent. of the differential count.
,, (2) Nov. 8th	—	—	—	—	65·6	23·7	5·3	1·8	2·6	0·9	At this count no nucleated red cells were seen.
Married daughter (C 1), Nov. 8th	4,086,660	75	0·94	13,150	80·0	17·0	2·0	1·0	—	—	No nucleated red cells seen.
Girl (C 2), (1) Oct. 19th.	4,453,330	71	0·81	12,600	78·0	15·0	7·0	—	—	—	No nucleated red cells seen.
,, (2), after taking iron, Dec. 18th	—	85	—	—	77·0	16·3	3·3	3·0	0·4	—	Two normoblasts were seen in counting 500 white cells.
Boy (C 3), Oct. 30th	4,700,000	73	0·78	18,520	66·5	29·0	3·5	—	1·0	—	No nucleated red cells seen.

TABLE II.—*Showing the Results of Blood Counts made by Dr. A. E. Boycott on Nov. 30th, 1909.*

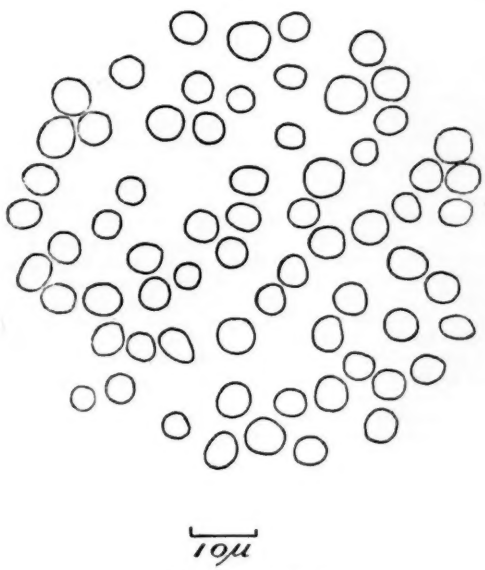
—	Red cells per cubic millimetre of blood.	Hæmoglobin per cent. (Haldane's method).	Colour index.	White cells per cubic millimetre of blood.	Differential count of 500 white cells per cent.						Neutrophile polymorphonuclears per cubic millimetre.	Remarks.
					Neutrophile polymorphonuclears.	Lymphocytes.	Intermediates.	Large hyalines.	Eosinophiles.	Mast cells.		
Father (B)	3,630,000	78	1·1	8,400	70·4	14·0	8·0	3·6	2·0	2·0	5900	Two nucleated red cells seen in counting 500 white cells.
Married daughter (C 1)	3,520,000	70	1·0	4,750	78·2	13·8	2·2	1·6	2·8	1·4	3700	Two nucleated red cells seen in counting 500 white cells.
Girl (C 2)...	3,460,000	77	1·1	3,800	77·6	14·8	3·2	3·4	1·0	0	2950	Two nucleated red cells seen in counting 500 white cells. Mast cells were present, though none were seen during the count.
Boy (C 3)	3,920,000	69	0·9	10,700	65·0	23·0	6·0	3·4	2·4	0·2	6900	One neutrophile myelocyte. 3 nucleated red cells seen whilst counting 500 white cells.

FIG. 1.



Red cell outlines in the father (B).

FIG. 2.



Red cell outlines in the boy (C 3).

shown (reckoned for a temperature of 20° C.) in the following table.

TABLE III.—*Showing the Viscosity of the Blood and Blood Serum.*

—	Father (B).	Married daughter (C 1)	Girl (C 2).	Boy (C 3).
Blood	5·0	4·72	4·86	5·8
Blood serum ...	1·88	1·88	2·0	2·08

The blood viscosity appears, therefore, to be practically within normal limits.

Resistance of the blood (red cells) to hæmolysis and the salt content of the red cells.—This was tested by means of graduated saline solutions, with (*a*) ordinary blood of the patients, and (*b*) their red blood corpuscles washed in normal saline solution. The results are shown in Table IV.

and the girl (C 2), and by Mr. Dudgeon (using both long and short methods) in all four patients. The result was negative in every case.

It may likewise be mentioned here for what it is worth that von Pirquet's "cuti-reaction" for tuberculosis, tried in the case of the girl (C 2), gave a positive result.

REMARKS.

There can be no doubt that our cases are examples of the condition known as congenital and familial chronic acholuric jaundice, congenital familial cholæmia, or congenital familial hæmolytic jaundice. Little is known regarding the average duration of life in affected individuals, but that the disease is not inconsistent with longevity is shown by the case of the father (A) of our patient (B), who evidently suffered from the same affection as his son and lived to the age of 70 years. Syphilis seems (in spite of Hayem's suggestion) to play no part in the etiology of the condition, and it could be practically excluded in the present cases.

The most obvious signs of the disease are chronic jaundice

TABLE IV.—*Showing the Effect of Graduated Saline Solutions in regard to Hæmolysis.*

Sodium chloride solutions per cent. in distilled water.	Father (B).		Married daughter (C 1).		Girl (C 2).		Boy (C 3).	
	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)
0·9	0	0	0	0	0	0	—	0
0·75	0	Trace.	0	0	0	0	—	0
0·64	Trace.	Distinct.	Distinct.	Distinct.	Trace.	0	—	Distinct.
0·56	Distinct.	Almost complete.	Nearly complete.	Nearly complete.	Distinct.	Trace.	—	Nearly complete.
0·5	Almost complete.	Complete.	Complete.	Complete.	Complete.	Complete.	—	Complete.
0·45	Complete.	,,	,,	,,	,,	,,	—	,,
Date of the test	Nov. 14th.	Nov. 14th.	Nov. 14th.	Nov. 14th.	Oct. 19th.	Nov. 3rd.	—	Nov. 12th.

For comparison with these tabulated results Dr. Dorner examined the blood (the washed red cells) (1) of a normal person; (2) of a person suffering from veronal poisoning; and (3) of a person with aortic valvular disease. In all these three cases hæmolysis did not appear until the dilution of 0·45 per cent. sodium chloride was reached. It is interesting to note that the two methods (using blood and using washed red cells) gave exactly the same result in the case of the married daughter (C 1).

In our four jaundice cases Mr. L. S. Dudgeon and Dr. G. G. Butler likewise kindly tested the resistance of the blood (as blood, not the washed red cells) to saline solutions of various strengths. They found that hæmolysis commenced with a solution of 0·625 per cent. sodium chloride in distilled water and was complete with a 0·4 per cent. solution, whereas according to their experience by the method in question normal red blood corpuscles do not show hæmolysis until a solution of 0·375 per cent. sodium chloride is reached, and then very slightly only.[26]

Mr. Dudgeon found in all four cases that the patient's blood serum did not exert any hæmolytic action on the red corpuscles of a healthy individual, or (as Dr. Dorner also found) on the patient's own red corpuscles (that is to say, it had no autohæmolytic action); nor had blood serum from a normal individual any hæmolytic action on the patient's red cells. Furthermore, no hæmagglutinative action was observed on adding the patient's blood serum to a normal person's red cells, the patient's red cells to a normal person's serum, or the patient's serum to his or her own red cells.[27] The same remarks applied when blood plasma was substituted for blood serum.

Wassermann's reaction for syphilis.—This test was kindly tried by Dr. J. Henderson Smith in the case of the father (B)

splenomegaly and (generally) a variable degree of anæmia. The jaundice is usually only slight and in some cases may probably be absent at times (see later on). It is never accompanied by icteric pruritus, xanthoma, or clubbing of the fingers. In many of the cases, however, occasional exacerbations occur, during which the patient sometimes complains of feeling weak and depressed. In one of our cases (the married daughter C 1) the jaundice was accentuated during her pregnancies. Cold weather or exposure to cold in some cases appears to intensify the yellow colour. In regard to exciting causes of the exacerbations of jaundice, Bettmann's case[28] was particularly interesting. The patient (a man, aged 29 years) was very decided that the exacerbations could be induced by (1) unusually large meals; (2) mental excitement; (3) excessive walking or dancing; and especially (4) exposure to cold. His jaundice was (as in our patient B) more decided in winter than in summer. Another interesting point in Bettmann's case was that during the exacerbations his blood serum was occasionally coloured with hæmoglobin and he occasionally had temporary hæmoglobinuria. It may here be remarked that in typical cases of paroxysmal hæmoglobinuria true jaundice has very rarely been known to be associated with the hæmoglobinuric attacks.

The fæces are nearly always well coloured and the urine is nearly always free from bilirubin. But occasionally, during exacerbations of the jaundice, the motions become paler than natural and the urine may contain bilirubin in addition to the excess of urobilin which is nearly always present. Except during exacerbations, the patients seem to enjoy fairly good health and can work much like average individuals of their own size and age. They are not stunted in growth like patients affected with Hanot's so-called "biliary cirrhosis" in childhood.

The liver is usually not obviously enlarged, but occasionally can be felt a little below the costal margin. In uncomplicated cases the liver appears not to be cirrhotic. A necropsy on one of Minkowski's cases[29] showed both absence of any cirrhosis of the liver and absence of any mechanical obstruction to the bile-flow. A pigment-stone, which was

[26] Cf. Hawkins and Dudgeon: Congenital Family Cholæmia, Quarterly Journal of Medicine, loc. cit. Mr. Dudgeon thinks that, strictly speaking, these hæmolysis tests indicate rather the salt contents of the red cells than the degree of resistance of these cells to hæmolytic agents generally.

[27] For Mr. Dudgeon's methods see his preliminary report on the Presence of Hæmagglutinins, Hæmopsonins, and Hæmolysins in the Blood obtained from Infectious and Non-infectious Diseases in Man, Proceedings of the Royal Society, London, 1908, Series B, vol. lxxx., p. 531; see also his paper in vol. lxxxi. of the same series, p. 207, and his paper with Mr. H. A. F. Wilson in vol. lxxxii., p. 67.

[28] Bettmann: Loc. cit.

[29] See O. Minkowski, loc. cit.

found in the gall-bladder, could not have caused any obstruction. In one of Claude Wilson's cases the patient died with an exacerbation of jaundice during pregnancy, but no obvious hepatic cirrhosis was discovered at the necropsy.

The spleen is nearly always considerably enlarged and easily palpated; it generally does not extend downwards much beyond the umbilical level, but sometimes reaches the inguinal region. Neither liver nor spleen is ordinarily at all tender to pressure.

The blood shows characteristic changes. Bilirubin is always present in the blood serum and blood plasma (see later on). There is nearly always some anæmia (oligocythæmia), and the degree of this anæmia may vary considerably from time to time. The red cells are mostly fairly normal in shape—that is to say, there is seldom much poikilocytosis—but in size they usually vary very much more than those of normal individuals, so that there is a condition of decided "anisocytosis" present. The mean diameter of the red cells is somewhat less than that observed in normal persons, whereas in cases of chronic obstructive jaundice the mean diameter of the red cells is generally distinctly above the normal mean for healthy individuals. Polychromatophilia and generally punctate basophilia of red cells are observable to a greater or less extent, and the frequent presence of nucleated red cells (normoblasts) is characteristic. The red cells are found to undergo hæmolysis, when added to graduated weak saline solutions, more readily than do the red cells of ordinary healthy persons, and still more readily than those of individuals suffering from obstructive forms of jaundice (see later on).

In all probability persons affected with congenital acholuric jaundice ought as far as possible to be protected from great cold, especially in early life, and when decidedly anæmic should be treated by iron preparations.

In regard to the pathology of congenital acholuric jaundice (congenital family cholæmia), the disease seems, as supposed by French and other observers, to be due to a peculiar congenital abnormality or imperfect development of the bone marrow, which manifests itself by a kind of inferiority in the quality of the red blood corpuscles. These corpuscles yield more readily than those of normal persons to certain hæmolytic influences. Probably they are destroyed more rapidly than they should be by the action of even physiological hæmolytic influences. Such an abnormal fragility of red cells and the resulting excess of hæmolysis may be supposed to give rise to a chronic enlargement of the spleen, due to the great demands made on the hæmolytic functions of that organ.[30] According to this theory, the excessive hæmolysis must be also regarded as the cause of abnormally great production of bile pigment in the liver, leading to chronic jaundice and urobilinuria. Moreover, owing to the habitual excessive loss of red blood corpuscles the erythroblastic functions of the bone marrow (by a kind of "vicious circle") would be chronically more or less strained, and this would account for the frequent presence of unripe forms of red cells (nucleated red cells) in the circulating blood and likewise for the frequent presence of some anæmia (oligocythæmia) and the other blood features of the disease.

Very decided anæmia is not invariably present—that is to say, is not present at all times in every case. Indeed, by analogy with other chronic affections one is probably justified in expecting that the reaction of the erythroblastic functions of the bone marrow may occasionally be excessive, in which event an actual condition of polycythæmia would be set up in association with the chronic acholuric jaundice. In fact, Guinon, Rist, and Simon[31] have described the case of a girl, aged 10 years, with chronic acholuric jaundice of variable degree, urobilinuria, and chronic splenomegaly; transitory cyanosis and polycythæmia (6,000,000 to 7,600,000 red cells in the cubic millimetre of blood) accompanied an exacerbation of the jaundice. Mosse[32] has likewise described the case of a man, aged 58 years, suffering from acholuric jaundice (if not congenital, at least chronic), with urobilinuria and chronic splenomegaly, whose red blood cells numbered 6,750,000 to 7,825,000 in the cubic millimetre of blood.

Here we may also mention that the anæmia (that is to say, at least in acquired cases of chronic acholuric jaundice with splenomegaly[33]) may occasionally be of a very severe degree and associated with the presence of megaloblasts ("gigantoblasts" with very large nuclei and polychromatophilic cytoplasm) in the circulating blood, so as temporarily to simulate the blood picture of pernicious anæmia; the diagnosis of such cases from pernicious anæmia complicated by splenomegaly and slight jaundice may be very difficult.

It is also highly probable that in some cases of the disease jaundice (at all events, obvious jaundice) may be intermittent instead of remittent—i.e., that (for a time at least) jaundice may be apparently absent, though the splenomegaly and characteristic blood features are present.[34] Such cases might be clinically termed cases of "splenomegalic anæmia" to distinguish them (A) from forms of anæmia with splenomegaly usually classified as "splenic anæmia of adults," and (B) from cases of so-called "infantile splenic anæmia" ("anæmia pseudoleukæmica infantum" of Von Jaksch). In other words, it appears almost certain that a form of "splenomegalic anæmia" without jaundice may occur (though perhaps only temporarily) as an incomplete form (*forme fruste*) of the chronic splenomegalic acholuric jaundice of which the family of the man (B) are complete examples.[35]

The jaundice in cases of chronic acholuric jaundice (whether congenital, as in the present patients, or acquired), besides being usually very slight, differs also, as already stated, from that of chronic obstructive jaundice in not being associated with bilirubinuria, acholic fæces, icteric pruritus, or xanthoma. Chronic obstructive jaundice likewise differs from these cases in regard to hæmolysis, as estimated by the effect on the erythrocytes of graduated saline solutions of various strengths. In chronic acholuric ("hæmolytic") jaundice, hæmolysis, as estimated in this way, occurs abnormally readily; on the other hand, in chronic obstructive jaundice the erythrocytes appear unusually resistant to saline solutions.

In chronic acholuric jaundice it seems as if a little bilirubin (possibly without the other constituents of the bile) passes into the blood, scarcely ever, however, in sufficient quantity to give rise to bilirubinuria. Occasionally, however, during exacerbations of the jaundice, as already mentioned, a trace of bilirubin may be detected in the urine.

According to Gilbert, Lereboullet, and Herscher[36] the blood serum of normal individuals contains on the average 1 gramme of bilirubin in 36 litres; but according to Hawkins and Dudgeon[37] bilirubin is by no means so frequently present. Dudgeon finds it present in the blood serum only of patients obviously jaundiced or in whom obvious jaundice is about to appear. Bilirubin can always be found in the blood serum of patients with acholuric jaundice.[38]

In regard to the apparent absence of urobilin or urobilinogen from the blood serum in our present cases, Dr. Dorner suggests that special tests with larger quantities of blood serum might possibly give a positive result. On the other hand, S. Moeller has published two cases of acquired chronic acholuric jaundice (with splenomegaly) in which, though the urine was rich in urobilin, he was unable to detect the presence of any urobilin in the blood serum,[39] though he employed the method of Friedrich Müller and Gerhardt as modified by Syllaba. On the other hand, bilirubin was, as usual in such cases, present in the blood and absent in the urine.

The subjective symptoms of patients with chronic

[30] During attacks of paroxysmal hæmoglobinuria the spleen sometimes, and the liver probably also occasionally, become temporarily enlarged. Vide G. H. K. Macalister, Quarterly Journal of Medicine, Oxford, 1909, vol. ii., p. 387.

[31] Guinon, Rist, and Simon: Bulletins de la Société Médicale des Hôpitaux de Paris, 1904, third series, vol. xxi., p. 786.

[32] M. Mosse: Deutsche Medicinische Wochenschrift, Berlin, 1907, vol. xxxiii., p. 2175.

[33] Cf. F. P. Weber: Acquired Chronic Acholuric Jaundice, with a Blood-picture at one time resembling that of Pernicious Anæmia, American Journal of the Medical Sciences, 1909, vol. cxxxviii., p. 24.

[34] Cf. Armand-Delille and Feuillié: Un Cas d'Anémie splénomégalique avec Fragilité globulaire, Société Médicale des Hôpitaux de Paris, Feb. 2nd, 1909, and the discussion which followed the exhibition of the case. See also Chauffard and Troisier: Des Rapports de certaines Anémies splénomégaliques avec l'Ictère hémolitique congénital, Société Médicale des Hôpitaux de Paris, Feb. 19th, 1909.

[35] Cf. F. P. Weber: International Clinics, Nineteenth Series, 1909, vol. ii., p. 85.

[36] Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris, séance de 15 Nov., 1907.

[37] Hawkins and Dudgeon: Loc. cit., p. 172.

[38] Cf. also S. Möller, Berliner Klinische Wochenschrift, 1909, vol. xlvi., p. 2303.

[39] See S. Möller, Ueber Chronischen Acholurischen Icterus mit Splenomegalie, Berliner Klinische Wochenschrift, 1908, vol. xlv., p. 1639. Cf. also Möller, Zur Frage der Urobilinentstehung, ibid., 1909, vol. xlvi., p. 2303.

acholuric jaundice, when not very anæmic, are often very slight, or even apparently absent. Occasionally, however, there may be attacks of abdominal pain or of general depression, lethargy, or drowsiness, accompanied by temporary increase in the degree of the jaundice, sometimes also by moderate fever, and (rarely) by paleness of the fæces. All the symptoms usually tend to be more severe in the acquired cases in adults, such as the patient whom one of us showed at the Medical Society of London on Feb. 8th, 1909,[40] than in congenital and familial cases, like those in the family now more especially under consideration. It seems as if the cause of the symptoms (whatever exactly that cause may be) is more successfully resisted or neutralised in the congenital cases—that is to say, in those of them that survive to adult age—than in patients who acquire the disease in adult life.

In regard to the diagnosis of congenital acholuric jaundice, the possibility of the presence of the so-called "Gaucher type" of splenomegaly may offer difficulties, as it did in the case of a boy (X), aged 14 years, whom one of us[41] showed before the Clinical Section of the Royal Society of Medicine on Feb. 12th, 1909. In many of the recorded cases of the Gaucher type of splenomegaly more than one member of the same family has been affected; the disease, moreover, is a chronic one, and is not a primary diffuse epithelioma or endothelioma of the spleen, as by some it was formerly supposed to be; in several cases a yellowish colour of the skin during life has been remarked. In the boy (X) the size of the spleen was unusually large for congenital acholuric jaundice. When later on he was kindly examined by Dr. Boycott his anæmia was of a chlorotic type, and his total blood volume, as estimated by Haldane and Lorrain Smith's carbon monoxide method,[42] was found (May, 1909) to exceed the normal for his body weight by 60 per cent.

A chlorotic type of anæmia is, however, probably not rarely associated with the congenital acholuric jaundice now under consideration, though it is, perhaps, a more constant feature in the Gaucher type of splenomegaly. In the boy (X) several points were in favour of the disease being the same as that of our present patients. His blood contained bilirubin and his urine was free from it. His fæces were well coloured. Examination of his red blood corpuscles (the mean diameter of which was rather below than above the normal standard for healthy individuals) showed hardly any poikilocytosis, but very marked anisocytosis, polychromatophilia, punctate basophilia, the presence of normoblasts (on one occasion 20 nucleated red cells were found during a count of 500 white cells), and a greater tendency to hæmolysis than that proper to normal individuals. In this connexion we would remark that a point still requiring special investigation is the condition of the blood with regard to hæmolysis in undoubted cases of the Gaucher type of splenomegaly.[43] There seems to be no abnormality in the differential count of white blood cells by which a case of splenomegaly can be recognised during life as belonging to the "Gaucher type."

We have seen the patient (X) again quite recently. He looks sallow, but at present shows hardly a trace of jaundice. His enlarged spleen reaches almost to his groin. His liver cannot be felt. His urine is pale and clear, but contains urobilin and urobilinogen in excess. The last examination of his blood (Nov. 15th, 1909) gave the following results: hæmoglobin (Sahli's method), 50 per cent.; red cells, 3,533,330 in the cubic millimetre; colour index, 0·7; white cells, 23,000 in the cubic millimetre. Examination of the red cells in stained films showed the presence of much anisocytosis but relatively little poikilocytosis (though several oval and some pear-shaped forms were seen); much polychromatophilia. There were about three normoblasts to every 100 white cells. In about half of the normoblasts the nucleus was irregularly-shaped or split up. The cytoplasm of the normoblasts was generally polychromatophilic and sometimes contained basophilic granules. The differential count of white cells showed nothing special.

[40] F. P. Weber: Transactions of the Medical Society of London, 1909, vol. xxxii., p. 362.

[41] F. P. Weber: Congenital Familial Splenomegaly with Chronic Acholuric Jaundice, Proceedings of the Royal Society of Medicine (Clinical Section), 1909, vol. ii., p. 117. See also F. P. Weber: Congenital Familial Splenomegaly, International Clinics, Philadelphia, Nineteenth Series, 1909, vol. ii., pp. 67–85 (regarding diagnosis of the condition, &c.).

[42] See Haldane and Smith, Journal of Physiology, London, 1900, vol. xxv., p. 331; Smith, Transactions of the Pathological Society of London, 1900, vol. li., p. 311; Smith and McKisack, ibid., 1902, vol. liii., p. 136; Douglas, Journal of Physiology, 1906, vol. xxxiii., p. 493; Boycott and Douglas, Journal of Pathology and Bacteriology, Cambridge, 1909, vol. xiii., p. 117 and p. 256, and Guy's Hospital Reports, 1908, vol. lxii., p. 157; Oerum, Deutsches Archiv für Klinische Medicin, Leipzig, 1908, vol. xciii., p. 356.

[43] On the Gaucher type of splenomegaly see especially: E. Gaucher, De l'Épithéliome primitif de la Rate. Thèse de Paris, 1882, and later writing by the same author; N. E. Brill, American Journal of the Medical Sciences, Philadelphia, 1901, vol. cxxi., p. 377; Brill, Mandlebaum, and Libman, ibid., 1905, vol. cxxix., p. 491, and 1909, vol. cxxxvii., p. 849; F. Marchand, Münchener Medicinishe Wochenschrift, 1907, vol. liv., p. 1102; F. Schlagenhaufer, Virchow's Archiv, 1907, vol. clxxxvii., p. 125; J. C. G. Ledingham, in Allbutt and Rolleston's System of Medicine, vol. v., 1909, p. 766; W. Risel, Ziegler's Beiträge zur Pathologischen Anatomie und Allgemeinen Pathologie, 1909, vol. xlvi., p. 241; P. Rettig, Berliner Klinishe Wochenschrift, 1909, Jahrg. xlvi., p. 2046; A. Plehn, Deutsche Medicinische Wochenschrift, 1909, Band xxxv., p. 1749.

NOTE ON A SIMPLE METHOD OF FIXATION OF THE COMPLEMENT IN SYPHILIS.

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THE method of fixation of the complement in syphilis, as indicated by Wassermann, entails too many laborious manipulations ever to come into use outside a laboratory. From time to time modifications have been introduced, but as excellent descriptions have been recently published in THE LANCET (Fleming,[1] M'Intosh[2]) we do not propose to enter into their details but to give an account of the method which we have employed and the results which have been obtained.

Hecht[3] in 1908 made use of the amboceptor and complement which exist in human serum for sheep's blood corpuscles. As antigen he employed an alcoholic extract of guinea-pig's heart. In May, 1909, Fleming[1] published an account of a simple method similar to that of Hecht, with which he has obtained good results. Margarett Stern[4] claims that such methods are superior to the original technique of Wassermann. The method which we have used is practically that of Hecht, and was communicated to us by Dr. Levaditi of the Pasteur Institute, Paris, who was kind enough to send us details of the technique which he employs.

Technique.

The following materials are required: (1) Alcoholic extract of heart muscle (antigen); (2) sheep's blood corpuscles; (3) saline solution (9 per 1000); and (4) serum to be examined.

Preparation of the antigen.—We have always used the human heart, but other observers have employed the hearts of different animals (guinea-pig, rabbit, &c.).[5] The muscle of a heart freed from fat and washed to remove all trace of blood is cut up in a mincing machine. 20 grammes are then well ground up in a mortar with absolute alcohol. The alcohol should be added gradually. When about 30 cubic centimetres have been added the volume of liquid is made up to 100 cubic centimetres, the whole transferred to a flask and well shaken. The flask is then heated on a water bath at 60° C. for two hours, left to stand at the temperature of the room for 24 hours, and the supernatant fluid then decanted.

The alcoholic extract thus prepared should be kept in a well-stoppered bottle away from the light. For use it must be diluted with saline solution; this should be done slowly and the resulting solution should be turbid. But first the proper dilution must be determined. This is done by performing the test with a known syphilitic and non-syphilitic serum. Different dilutions of the extract are used, and that dilution is chosen which will prevent hæmolysis with the syphilitic serum, but which will have no effect on the non-syphilitic one.

In connexion with the preparation of the extract, we believe that the grinding up in a mortar is most important. In two cases in which this precaution was neglected the resulting extract proved to be of little or no value. The extract will retain its fixing properties during several months.

Of four extracts made, one served us for four months and had to be diluted ten times; another, our present antigen, is diluted 25 times, and has now been in use for two months.

We obtained two of the hearts in the course of an ordinary necropsy, which in France may not take place less than 24 hours after death. The first extract was made from the heart of a child who died from pulmonary tuberculosis. The second from an individual who was shot in a street fight; although this heart was obtained within a few hours after death, it furnished an extract which had to be diluted only seven times, and which gave inconstant results. It was therefore abandoned. The third heart came from a man who had stabbed himself in the cardiac region; the fourth from a woman about 60 years of age, who died from apoplexy.

The extracts (first and fourth) which were good were those obtained from hearts extracted more than 24 hours after death; in the other two cases the medico-legal post-mortem examination took place within eight hours after death.

The *sheep's corpuscles* were obtained twice a week from the abattoir. 5 cubic centimetres of defibrinated blood are mixed with 100 cubic centimetres of saline solution and preserved in an ice chest. The flask containing the blood should be exposed to the air, and shaken from time to time in order to renew the oxygen. If any hæmolysis takes place the fluid should be pipetted off, and replaced by a fresh solution.

The *serum* may be obtained as desired, though personally we prefer to withdraw the blood from the ear. About 1 to 2 cubic centimetres will be sufficient. We collect the blood in small glass tubes, which are plugged with cotton-wool, and kept in the ice chest. The serum may be separated from the clot, and will keep longer if this is done. The serum preserves its hæmolytic power for a considerable time, though this varies with different sera. We have kept one which gave a definite reaction at the end of 10 days; on the other hand, several sera have lost their hæmolytic power at the end of two or three days.

The test.—The tubes are arranged in three rows on a stand made of plaster-of-Paris. The unit generally used is 100 cubic millimetres. The following solutions are added.

To Tube 1: 1 unit of serum, 1 unit of saline solution, 1 unit of antigen.
To Tube 2: 1 unit of serum, 2 units of antigen.
To Tube 3: 1 unit of serum, 2 units of salt solution.

The last tube acts as a control. The tubes are incubated at 37° C. for about 1½ hours One unit of sheep's corpuscles is added to each tube, and the whole returned to the incubator until hæmolysis has taken place in the control tubes. This generally occurs within 10 to 30 minutes. The tubes are then placed in the ice-chest until sedimentation of the non-hæmolysed corpuscles has taken place.

A much smaller unit may be employed, provided that the solutions are added in like proportion, but we consider that the result is more striking when the unit is 100 cubic millimetres. There is also another advantage. Should the serum be slightly hæmolysed previous to use, owing to the larger dilution which it undergoes, a result is obtained which can be read without uncertainty.

It would seem that the best time to perform the reaction is from 6 to 12 hours after the blood has been withdrawn, as this interval allows the clot to retract firmly and furnishes a clear serum.

Interpretation of the result.—A positive result is obtained when there is no hæmolysis in the first and second tube, but hæmolysis in the third tube; a negative result when hæmolysis takes place in all three tubes. A trace of hæmolysis in the first tube, provided that the second remains clear, may be taken to indicate a positive result. In cases which have been followed from the commencement of treatment we have noticed that the reaction begins to disappear in this way. Should there be complete hæmolysis in the first tube and no hæmolysis in the second we regard the result as being negative. Twenty cases have given this result. Of these, 13 were controls, 2 were persons married to syphilitics but apparently themselves not affected by the disease, 3 were cases of long-standing syphilis which had been very well treated; the other two were a case of hereditary syphilis and a suspect. Moreover, with a subject certainly non-syphilitic, and whose reaction has been tested on nine different occasions during a period of six months, the above result was obtained twice. Levaditi, however, who was kind enough to give us his opinion on this point, considers this result as doubtful.

In order to find out if digestion had any effect on the hæmolytic power of a serum we have done the reaction with a serum obtained both when fasting and after a heavy meal. Complete hæmolysis was obtained on both occasions.

Should no hæmolysis occur in the first tube but hæmolysis in the second some error has crept in and the test must be repeated. In a certain number of sera no hæmolysis will be found in all three tubes. This is due to the absence of either amboceptor or complement. Out of 338 sera examined for the first time 19 were found lacking in hæmolytic power, that is to say, 5·63 per cent. Three of these sera were over a week old at the time of employment, and if these are deducted the percentage is 4·73. In all these cases in which we have been able to repeat the reaction a definite result has been obtained on adding a fresh normal serum which had been previously tested. In ten cases, for one reason or another, we were unable to obtain a fresh supply of serum, and hence the test could not be repeated.

Results.

	Positive.	Negative.
1. Syphilis treated and untreated ...	118	28
2. Para-syphilis	32	9
3. Syphilis suspected	10	26
4. Supposed non-syphilitics	6*	212

* On a second examination two of these cases gave a negative result. A third was proved later to be probably syphilitic.

Below we give a table showing an analysis of the above results. For the sake of comparison we have added a column showing the percentages obtained in 1000 cases by Jesionek and Meirowsky[6] with the original method of Wassermann, which they published in November, 1909. Under the heading, "Secondary syphilis insufficiently treated," we have included cases which, owing to the short time they had been infected, had not yet undergone a prolonged treatment at the time of examination.

—	Positive results.	Negative results.	Percentage positive.	Percentage positive obtained by Wassermann's method.
Primary syphilis	10	5	66·6	66·6
Secondary syphilis:—				
Treated energetically ...	3	3	50·0	
Treated insufficiently ...	22 } 49	2 } 6	91·6 } 89·1	96·7
Untreated	24	1	96·0	
Tertiary or latent syphilis:—				
Well treated	7	14	33·3	
Treated insufficiently ...	37 } 44	2 } 16	94·8 } 73·3	87·5
Congenital syphilis	15	2	88·2	88·8
Tabes	7	7	50·0	52·6
General paralysis	25	2	92·5	85·7
Primary syphilis suspected ...	1	13*	7·1	
Secondary syphilis suspected	4 } 10	6 } 26	40·0 } 27·7	—
Tertiary or latent syphilis suspected	5	7	41·6	

* Under this heading are included seven cases in which the clinical diagnosis was that of "soft sore."

Non-syphilitic cases (result negative).—Enteric fever, 16; leukæmia, 4; leprosy, 1; scarlet fever, 4; Friedreich's ataxia, 1; osteitis deformans; 1; tuberculosis, 12; hydatid cyst, 4; diphtheria, 7; mental diseases, 19; various, 143.

Six observations on patients concerning whom there was no question of syphilis gave a positive reaction.

Two cases of scurvy; cod fishers, aged 45 and 19; reaction positive. The series on that occasion contained six non-syphilitic sera and one syphilitic serum, all of which reacted normally. A week later the boy gave a negative reaction, but his companion remained positive. Their reactions were repeated at the end of a fornight and three weeks, always with the same result. The older man denied all knowledge of ever having had syphilis, but on close examination admitted that on a voyage some years ago he had suffered from a rash which disappeared rapidly under treatment, which from his description was probably mercurial.

A morphinomaniac in whose personal or family history no evidence of syphilis could be obtained.

A girl; gastritis and suspected tuberculosis. No history of syphilis obtainable.

A young woman with enlarged tuberculous glands gave a positive reaction, but on two occasions later the result was negative.

Case of osteomyelitis in a youth treated surgically. His reaction was positive twice. He denied ever having had syphilis, which was not suspected.

With regard to the influence of treatment on the reaction the following cases are of interest:—

A man (hard chancre) was treated with injections of 10 centigrammes of calomel once a week. His serum was tested every week, the blood being obtained before the injection. After the fourth injection partial hæmolysis was noticed in the first tube, and after the sixth injection the reaction was negative in both tubes. Unfortunately, the patient lived in the country and was lost sight of, so that we have been unable to find out after what interval the reaction returned.

In two other cases the reaction was negative after five injections of calomel, but in one of them a positive result was obtained two months later after a suspension of treatment.

A man, with a very severe attack of syphilis. After six injections of *huile bi-iodurée* he twice gave a negative reaction. Two months later, after treatment had been suspended for 28 days, the result was positive.

A man, who began treatment one month after the appearance of the chancre. The reaction was positive. 13 injections, each of 5 centigrammes of calomel, have produced partial hæmolysis in the first tube.

A man, infected a year ago, and who has taken daily three pills each containing 1 centigramme of Hg_2I_2, gave a positive reaction after having thus taken about 450 pills.

In the case of a man infected over 20 years ago, and who recently has had cerebral symptoms, 12 injections of calomel did not succeed in causing the reaction to disappear. Several other patients treated regularly with pills of Hg_2I_2 have given positive results more than 30 years after infection.

A patient who, during 20 years, has undergone a yearly course of treatment with HgI_2 and KI, and who has symptoms of *tabes fruste* (Argyll-Robertson pupil, loss of knee-jerks), has given a negative reaction.

Several observers have published cases where energetic treatment with "grey oil" has abolished the reaction.

In view of such varying results, what conclusions may be drawn as regards treatment? It would seem that an early and energetic treatment will cause the reaction to disappear in primary and secondary syphilis. This does not imply that the disappearance is definite, and with an interruption of treatment it will almost certainly reappear. In long-standing syphilis, with or without symptoms, a positive reaction is often obtainable, especially in those cases which have been inadequately treated, and in such cases it is difficult to modify the reaction by treatment. It would seem, therefore, that if the reaction has any value as a means of regulating treatment, attempts should be made to render a positive reaction negative, and to keep it negative. Treatment with KI and pills of mercury, even when continued over long periods, would appear to be less efficacious than injections of calomel, grey oil, &c. Nevertheless, it would be rash to do more than offer a suggestion so long as the exact meaning and value of a positive or negative reaction remain unknown.

A few other cases may be mentioned.

A woman had her eye removed for a tumour of the orbit which microscopically was a melanoid sarcoma. Three months later she came to hospital on account of a fluctuating swelling of about the size of a half-crown on the forehead, and which presented the clinical aspect of a gumma. The test was done with fluid extracted by puncture of the swelling and mixed with one unit of normal fresh serum. Result positive. Her serum also gave a positive reaction. The patient gave a history of numerous miscarriages.

A man with lingual ulcer diagnosed as syphilitic. A negative result was obtained six times with different dilutions of antigen. Several weeks later the ulcer became characteristic of a neoplasm, with enlarged glands, &c.

A married woman, with enlarged cervical glands, had a deep ulcer on the tongue. Family history of tuberculosis. Syphilis was suspected, as the husband formerly had had a genital erosion. Both gave a negative reaction. A portion of the lingual ulcer after removal was found microscopically to be of a tuberculous nature.

A young woman with a clinical diagnosis of lymphosarcoma of the tonsil twice gave a positive reaction. A few weeks later she returned with marked secondary symptoms.

Cerebro-spinal fluid.

The procedure with cerebro-spinal fluid is the same as with serum, except that a unit of 150 cubic millimetres is employed. A unit (100 cubic millimetres) of fresh normal serum must be added to supply the hæmolytic system.

Results.

	Positive.	Negative.
General paralysis	8	7
Hereditary syphilis	—	5
Syphilis	—	1
Non-syphilitic	—	1
Cerebro-spinal meningitis	1	1

In those cases of general paralysis in which the serum was examined at the same time the following results were obtained. Out of 13 cases:—

In 7 cases serum and cerebro-spinal fluid both positive.
„ 4 „ serum positive, fluid negative.
„ 1 case serum and fluid both negative.
„ 1 „ serum negative, fluid positive.

Of the five cases of hereditary syphilis four were congenital idiots, whose parents were syphilitic; in each case the serum gave a positive reaction. The other case was an infant 2½ months old. Spirochætæ were found in the cerebro-spinal fluid.[7] The reaction was negative twice, and unfortunately we were unable to obtain the blood.

The case of syphilis which was negative was a woman suffering from dementia, and who had cutaneous gummata. The serum was positive.

The fluid in the case of cerebro-spinal meningitis, which gave a positive result, was rich in meningococci, and was obtained from a child in whom there was no reason to suspect syphilis.

The above is a *résumé* of the results obtained. Our object has been to try to find out if a simple method would give results which, for practical purposes, can be relied upon.

In conclusion, we desire to offer our thanks to Dr. Levaditi for his kind advice; to Professor W. Dubreuilh, Drs. Anglade, Lauga, and Piouffle; and to the physicians and surgeons of the hospitals in Bordeaux who have been kind enough to place their patients at our disposal.

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Bordeaux.

GLARE, ITS CAUSES AND EFFECTS.[1]

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IT is, perhaps, scarcely necessary to define what is meant by "glare." Everyone is familiar with the uncomfortable sensation experienced when a bright light shines directly into the eyes, and we may accept this example as a sufficient indication of the meaning of the term. It is only when we begin to analyse the conditions, physical and physiological, which give rise to the discomfort that we fully realise the complexity of the task we have undertaken.

Before discussing the conditions which give cause to glare in employing artificial methods of illumination it will be well to remind ourselves of familiar examples under natural circumstances. Here the physical data at our command have been firmly established by long and patient investigation, with far greater certainty, indeed, than in the use of the relatively less complicated conditions of up-to-date artificial illumination.

We have all experienced the discomfort of glare off the sea in bright sunlight. Perhaps the discomfort has been enhanced for us by the associated pangs of *mal de mer*. Another striking example is the glare from a wet road when the rain has not long ceased and the sun has broken through the clouds somewhere in the line of vision. Glare is common in southern countries, where the sun is bright, the atmosphere clear, and the ground surface white. It is to be noted that under such circumstances glare may be experienced even when the sun is not shining directly in the line of vision; indeed, it may be actually behind the observer's back. Further, it should be noted that the glare is absent or little marked in tropical countries where the surface of the ground is covered with grass or other vegetation.

I think that these examples may afford us some clue as to the physical conditions underlying glare. Another example will put us on the track of the physiological basis of the phenomenon. If one passes from a dark room suddenly into bright sunlight glare is experienced in a peculiarly acute form. It may be several minutes before objects can be distinguished at all clearly and yet longer ere they can be viewed with comfort.

[1] A paper read at the opening of a debate at a meeting of the Illuminating Engineering Society at the Royal Society of Arts on Jan. 11th.

Under artificial conditions glare is experienced in an acute form when a bright light is situated almost in the line of vision between the eye and the object observed.

I will permit myself one more example taken from a pathological or abnormal condition, that of the albinos. Their hair is white or extremely pale in tint, their irides are red owing to the blood circulating in the vessels, and their eyes show rapid oscillations, a condition known as nystagmus. These people suffer much from glare, even under circumstances which cause no discomfort to normally constituted individuals. Much of their distress is alleviated by the use of tinted glasses which modify the intensity of the light which reaches their retinæ.

Since glare is essentially an uncomfortable sensation, it is clear that the fundamental point in the problem before us is physiological. The eye shows a marvellous adaptability to extremes of intensity of illumination. Under favourable conditions small print may be read easily by the feeble light of a farthing dip or in the brilliant blaze of a southern sun. Experiment has shown that the sensitiveness of the retina to impressions is enormously increased by protecting the eye from all light. If the eyes are lightly bandaged so that no pressure is exerted but light is effectually excluded, in the course of about half an hour the retina reaches its maximum sensibility; it is then possible to perceive a glimmer of light which is quite invisible under any other conditions. Exposure to light, on the other hand, causes diminution of retinal sensibility, so that a much greater degree of change of intensity of illumination is necessary to produce a conscious impression than in the former circumstances. This constant variation in the sensitiveness of the retina, which obviously subserves so useful a purpose in everyday life, is called retinal adaptation. We have seen that in dark adaptation, when the retina is extremely sensitive, bright light causes an uncomfortable or even painful sensation—in other words, glare. We must conclude, therefore, that the condition of adaptation of the retina is one of the most important factors, if not *the* most important, in the production of glare. It is not, however, the only cause, for glare may be induced by less rapid and less extreme variations in illumination than those adduced as examples.

It will have been noticed that in most of the examples of the occurrence of glare in natural circumstances it is caused by strong light reflected upwards into the eyes from the surface of the sea or ground. It would appear, therefore, that light entering the eye in such a direction is particularly prone to initiate the symptoms. In most circumstances only relatively feeble diffuse light enters the eye, for the sun or other source of light is high above the observer and the eye is protected from the direct rays by the overhanging brow and lids, to which is often added some form of artificial headgear. Light strongly reflected from below is for the most part worse than useless for visual purposes, as must have often been observed in reading books printed on highly glazed paper. This is detrimental to clear vision for two reasons. To take the example of the printed page. First, it obscures the contrast between the letters and the paper. No ink is so black that no light is reflected from it. By strongly increasing the intensity of the incident light the increase in the reflection of light from the ink is greater in proportion than the increase in the reflection from the paper, and hence the contrast which is so essential to clear vision is diminished. Secondly, many of the reflected rays impinge upon the retina in the immediate neighbourhood of the image, so that the contrast is further diminished here. Sharp definition depends largely upon the contrast between the retinal image and the surrounding area of the retina. By a physiological process which was first pointed out by Hering, and is known as spatial induction, the sensitiveness of the surrounding retina is relatively depressed, particularly at the junction of the reacting surfaces. Flooding the retina with diffuse light must necessarily depress this reciprocal action and diminish the sharpness of definition of the image.

It might be argued that glare is often caused by *excess* of contrast, as in the familiar examples of the intensely bright beams of light from a lighthouse or the acetylene lamp of a motor at night. Analysis of the conditions will, however, show, I think, that the same causes are at work here, augmented by an unusual degree of dark adaptation of the retina.

Owing to the inherent defects of the optical apparatus of the eye no retinal image is absolutely sharp; there is, therefore, a natural tendency to diffuseness of the image, no matter how perfect the eye, and spatial induction is apparently devised specially to counteract this irradiation, as it is called. Anything therefore which interferes with spatial induction must interfere seriously with clear vision.

The eye possesses an automatic protective mechanism against the influence of bright light in the iris. This acts as a diaphragm, which contracts concentrically, thus diminishing the size of the pupillary aperture, when the incident light is increased. By diminishing the aperture it also reduces spherical aberration and tends to eliminate irradiation. The range of the apparatus is not sufficiently great to abolish the evil results of intensely high illumination, as is shown by the cases of serious permanent defects of vision which follow looking at eclipses of the sun and exposure to the bright flash of a short circuit with unprotected eyes. Hence, the very *intensity* of the incident light may cause glare and even worse consequences by producing grosser changes in the retina than those which we have been considering. How these act is not yet satisfactorily explained, largely owing to the rarity of the opportunity for making anatomical examination of the eyes from suitable cases. We may conjecture that profound chemical changes occur in the visual purple and even in the structural elements leading to their destruction and loss of function. It would take me too long and lead me too far to discuss the matter fully, but if the conjecture has any basis we are naturally led on to inquire whether it is the mere *intensity* of the light which is the *causa causans* or whether it is some particular form of energy in the incident rays which brings about the disastrous result.

The incident light is always composite in character. By passing it through a prism it can be broken up into its constituent rays, revealing the coloured spectrum in all its glory. If the prism is made of quartz it may be easily demonstrated by suitable means that there are yet other rays of importance in the ultra-violet region. Since the ultra-violet rays are known to be specially potent in effecting chemical change attention would naturally be directed first to them. The eye, however, has a very efficient protective mechanism against them, at any rate so far as the retina is concerned, for they are absorbed for the most part by the crystalline lens. As you are aware, much attention is being directed to these rays at the present time, and since it is not probable that they are more than a subsidiary element at most in the causation of glare it may be well to neglect them in this connexion. Otherwise the discussion may easily transcend the limits which it would be well to put upon it from utilitarian motives. More to the point is the question whether colour or luminosity is prepotent in causing glare. Instances culled from nature and artifice alike point to the fact that colour is, if anything, beneficial in reducing the tendency to glare. The natural adaptation of the retina to red has, however, to be taken into account. In mathematical phraseology I am inclined to think that so far as the physical side is concerned glare is a function of luminosity rather than of colour. On the physiological side I opine that temporal induction (retinal adaptation) and spatial induction are the prepotent factors, the latter specifically invalidated by the direction of incidence of a superfluity of extraneous rays.

In the milder form of glare the discomfort experienced scarcely amounts to pain. It is difficult or impossible to define where one ends and the other commences. Prolonged discomfort—not in itself painful—will undoubtedly induce pain. Here the psychological factor becomes important. The bombarding of the peripheral mechanism with submaximal stimuli appears to produce an accumulative effect upon the central mechanism or brain, leading to the consciousness of pain, which is so assertive that it drowns the specific characteristics of the sensations which have originated it. In discussing a condition like glare, which leaves no permanent traces in the form of anatomical changes in the parts affected, the psychological factor cannot be neglected with impunity. Apart from the pain induced by mere summation of submaximal stimuli it is also caused in the majority of cases by the prolonged efforts to minimise the discomfort. The discomfort of even moderate glare causes screwing up of the eyes and puckering of the brows, and this prolonged muscular contraction is in itself painful. The puckering of the brow is specially liable to cause pain by squeezing the supra-orbital nerve against the frontal bone

Painful impressions induced by the stimulation of one branch of a nerve are liable to spread and be referred to other branches of the same nerve. Hence it is that pain is referred in these cases to many other areas supplied by the fifth cranial nerve, notably in the production of frontal headache.

In the more acute forms of glare, however, pain is experienced at the outset. Now we have no evidence to show that any stimulus, however powerful, can produce pain through the purely visual nerve tracts. Pain is regarded as invariably due to the stimulation of certain afferent nerves, the nerves of common sensation. The question arises, therefore, whether the pain of glare is not due to stimulation of other nerves than the retina and visual paths. There is an allied condition commonly called "photophobia." When a particle of steel or coal-dust gets into the eye there is an intense spasm of the lids accompanied by a copious flow of tears. The same phenomenon occurs in an inflammatory disease of the conjunctiva, common in children, known as phlyctenular conjunctivitis. Under such circumstances it is difficult to open the eyes at all, and it generally appears to be more difficult in bright light than in the dark, hence the term photophobia or dread of light. As a matter of fact, it is very doubtful if light plays any potent part in the production of the condition, which is therefore better termed reflex blepharospasm (spasm of the lids). Now reflex blepharospasm is undoubtedly due to excitation of the nerve endings of the fifth nerve in the cornea and conjunctiva, and although the excitation is largely if not wholly mechanical in most cases, it cannot be absolutely asserted that light is incapable of stimulating these nerve-endings. Other branches of the fifth nerve supply the iris and ciliary body, as well as the choroid which lies immediately behind the retina. Is it possible that the pain of intense glare is due to over-stimulation of these nerve endings? Although inherently improbable, it cannot be denied that the pain wholly or in part may be due to the irritation of the sensory nerves in the cornea or choroid, in the latter cases specially in the macular region where the retina is thinnest, and in the iris, here brought about perhaps by the intense constriction of the sphincter muscle of the pupil. Further investigation of this interesting problem is needed before any final conclusion can be arrived at.

In the meantime we may leave these rather esoteric conjectures and confine our attention to the more probable explanation already adduced, which at any rate accounts for the visual manifestations of glare and emphasises most clearly the conditions to be avoided.

There are many other points which I might here mention in support of my thesis, notably the penetration of light through the sclerotic, especially in albinos, the entoptic reflection of light, and so on.

With regard to the *effects* of glare they may be roughly divided into two groups—the relatively innocuous and the severe. Mere dazzling, attributable to moderately intense illumination and particularly to widespread diffusion of light over the retina, produces discomfort, which, when prolonged, eventuates in actual pain. The causes of the pain thus experienced have already been considered and are chiefly due to excessive action of an inadequate protective mechanism.

Severe results are due for the most part to the intensity of the stimulus, which may be extremely rapid in its action, as, for example, in the case of short-circuiting of a powerful electric current. Various grades may be met with in the visual defect resulting from exposure to bright light. A blurred spot or negative after image may be regarded as physiological when it is relatively transient, but with greater intensity the blurred spot persists and may even be permanent; it is then called a scotoma. With the greatest degrees of intensity the scotoma is associated at a later date with anatomical changes in the retina—pigmentation in the macular region and so on—a condition seen typically in cases of visual defect after observing eclipses of the sun with unprotected eyes. Prolonged exposure to bright light in the tropics and at sea is not infrequently followed by night blindness. These cases are of peculiar interest, since they show in a marked degree the effects of retinal exhaustion. It was shown long ago that in them if one eye is bandaged and thus protected from light during the day the night blindness is warded off as far as that eye is concerned. It is almost certain that the retinal exhaustion in these cases is due primarily to bleaching of the visual purple, which is not restored with the usual rapidity. In some cases of this kind malnutrition plays a part, but others occur without this factor. Night blindness has been known to follow a long motor drive facing the sun which was near the horizon and consequently shining directly into the driver's eyes.

Now these changes in the retinal purple are chemical in character and might be expected to be induced most readily by the most actinic rays of the spectrum—viz., the ultra-violet rays. These are known to be responsible for so-called "snow-blindness," but this is a superficial inflammation of the mucous membrane covering the eye and is of a completely different character.

Time will not permit me to enlarge upon the topic further, but I cannot close without expressing the hope that the consideration of this highly complex subject may result not only in a good debate—that is a foregone conclusion in the presence of so many distinguished authorities on light and its uses—but what is far more important in the stimulation to experimental research.

Queen Anne-street, W.

A CASE OF PYOPNEUMOTHORAX DUE TO AN INHALED TOOTH OR TO A PERFORATION OF A GASTRIC ULCER; DRAINAGE; RECOVERY.

BY W. GIFFORD NASH, F.R.C.S. ENG.,
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THE patient was a married woman, aged 42 years, who since the death of her husband one and a half years previously had not been in good health, but there had been no definite illness. She had suffered from pain after food for some months, which she attributed to flatulence, and for two weeks had felt pain in the left shoulder. She had spent August and part of September in Jersey, and whilst there had all her teeth extracted on Sept. 1st, 1906. She returned to Bedford on Sept. 22nd, and was living on soft spoon diet. On the 27th, immediately after eating her dinner, she was seized with a very violent pain in the left hypochondriac region.

At 2.30 P.M. I saw her and found her in great pain in the region of the stomach. She was breathing very rapidly and like a person with pleurisy. No friction could be heard. The pulse was rapid and the temperature was normal. I gave her some brandy-and-water, and ordered a mixture containing bicarbonate of sodium, sal volatile, and peppermint-water to be given every hour, as I thought the attack of pain was due to acute flatulent dyspepsia. I had to go out of town and could not see her again until 8 P.M., when I found her sitting up in a chair suffering from great pain and dyspnœa; temperature 100° F. and pulse 120. I diagnosed pleuritis and gave an injection of morphia.

On Sept. 28th (second day) the morning temperature was normal, pulse 120, and respirations 40. The lower half of the left chest was tympanitic and splashing could be heard. All the signs of pneumothorax were present. The evening temperature was 101°, pulse 140, and respirations 48. The onset of pneumothorax with the history of dyspepsia made me suspect perforation of a gastric ulcer. I thought the pain in the left shoulder, felt for two weeks, might have been a referred pain of gastric origin. On the 29th the morning temperature was normal, evening temperature 101°, pulse 140, and respirations 48. There were dulness and loss of breath sounds over the lower half of the left chest and signs of air in the pleura over the upper half. On the 30th the morning temperature was normal, evening temperature 101°, pulse 140, and respirations 48. There was complete dulness of the left side of the chest. The heart's apex was displaced to the right. There were loss of vocal fremitus and resonance, and absence of breath sounds except at the extreme apex and along the side of the spine.

On Oct. 1st, the symptoms observed up to this time having shown the sudden onset of a pneumothorax, followed by a gradual effusion of fluid so as to fill up the left

pleura, I determined to aspirate and did so at 10 A.M. I drew off about a pint of very offensive straw-coloured fluid with some gas. The character of this fluid showed that free drainage was necessary, so at 3 P.M. the same day I freely drained the left pleura. The fluid which escaped was stinking and yellow, with an odour of rotten eggs. I thought the nature of the fluid confirmed the idea that there was a communication with the stomach. On the 4th irrigation of the cavity twice daily with a solution of iodine was commenced. A considerable quantity of plastic lymph came away with irrigation. The fœtid odour of the wound pervaded the house. The wound progressed very well until the 31st, when the tube was removed on account of cough. It was re-inserted on Nov. 5th. On the 18th she began to expectorate offensive matter which had the same odour as that escaping from the sinus. On Dec. 4th she began to walk about her room. On the 24th there was a fresh rise of temperature, evidently due to retention of pus. On the 25th the pus coughed up had a nasty taste.

It was clear at this time that there was a cavity containing pus which either was discharged through the sinus or expectorated through the lung. If there was little pus from the sinus more was expectorated, and *vice versâ*. At the end of November when pus began to be coughed up I wrote to the medical man who had given the anæsthetic for the extraction of teeth and inquired whether it was possible for a stump to have entered the air passages. He remembered having missed a stump, which he had seen on a sponge in the mouth, but the dentist was certain that he had accounted for every stump. As the abscess continued to discharge, early in January I had the chest X-rayed. A large, dark area at the base of the lung could be seen, but nothing like the shadow of a stump. On Jan. 20th, 1907, the patient went to Jersey, to her parents' home, as we thought that the climatic conditions would be more favourable than in Bedford.

The subsequent history is best told in the following letter from Mr. A. E. Hind of Jersey, dated June 9th, 1907:—

"When the patient arrived there were yet a cavity and a sinus. Under X rays one could see a dark patch rather larger than one's fist. No part of the patch was darker than the rest. A tablespoonful of dilute formalin solution was injected into the sinus and immediately coughed up in a rather alarming manner. Dark pyogenic membrane came from the sinus from time to time and was sometimes coughed up. After keeping the drain-tube in for some time without result I injected about two teaspoonfuls of a 30 per cent. solution of peroxide of hydrogen. This resulted in a lot of pyogenic membrane being coughed up. Again the coughing was accompanied with rather alarming dyspnœa. The injection was, however, repeated daily. The material coughed up became daily whiter, till after about 14 injections only clear white froth without signs of pus or pyogenic membrane came, and the discharge from the tube ceased. The temperature became normal, and the area of dulness almost all vanished. The tube was left out at the beginning of May and the patient's condition seems almost perfect. Occasionally a little purulent matter is coughed up, but the sinus remains closed. There has been no sign of tooth stump, and I think your original diagnosis was the right one."

The patient has remained well up to the present time (January, 1910), and is now in perfect health.

Remarks.—The interest of this case depends on the cause of the pyopneumothorax, and from this point of view it is unfortunate that the cause must remain unexplained. From the patient's point of view it is a matter of congratulation that we did not get the opportunity of verifying our diagnosis.

It is evident that the gas in the pleural cavity must have come either from the air passages of the lungs or from the alimentary canal. In the first case it could be explained by a tooth stump having been inhaled 26 days before the onset of the symptoms, which, having lodged in the left bronchus, had set up an abscess in the lung, which had burst into the pleural cavity. In the second case a gastric ulcer may have perforated the diaphragm and allowed escape of stomach contents into the left pleura, causing pyopneumothorax and a local gangrene of the lung, which subsequently caused a fistulous communication with the bronchus. Both of these causes of pyopneumothorax are of extremely rare occurrence.

In favour of the cause being a tooth stump we have the history of recent tooth extraction and the suspicion of the anæsthetist that a stump was lost. There were, however, none of the usual signs of a foreign body in the bronchus, and the dentist was clear that no stump was missing. There was no dyspnœa, cough, or fœtid expectoration between the date of tooth extraction and the sudden onset of the pyopneumothorax. There was a nasty taste in the mouth, but this might have been due to discharge from the tooth sockets.

It appears from the writings of various authors and from the published cases and discussions on foreign bodies in the bronchi that they very rarely cause pyopneumothorax or empyema. The usual result is bronchiectasis, which goes on until the foreign body is coughed up or the patient dies from phthisis. An exception to this is a case related in Holmes and Hulke's "System of Surgery" (Vol. I., p. 764), where a person inhaled a set of four false teeth, and 13 years later died from acute pleurisy. The right pleural cavity contained 5 pints of pus and the teeth, which had ulcerated through the lung.

A paper on Foreign Bodies in the Bronchi was read by Mr. R. J. Godlee at the Royal Medical and Chirurgical Society on March 24th, 1896, in which he related five cases in which the foreign body had set up bronchiectasis. Again, at a discussion at the Clinical Section of the Royal Society of Medicine in October, 1908, Mr. Godlee stated that a tooth lodged in the bronchus did not get into the lung proper, such an excursion being reserved for bits of grass, corn, &c. In the paper which preceded this discussion Dr. H. Lambert Lack stated that if untreated the prognosis in these cases of foreign bodies in the bronchi is extremely unfavourable, and unless by a happy accident the foreign body is expectorated they are almost always fatal.

In favour of perforation of a gastric ulcer through the diaphragm into the left pleura were:—1. The history of dyspepsia and ill-health extending over several months. 2. Pain in the left shoulder. It is possible, however, that this might have been caused by a local inflammation of the lung around a tooth. 3. The occurrence of pyopneumothorax on the left side. A foreign body would be more likely to fall into the right bronchus. 4. The fact that there was no expectoration of pus until 50 days after the onset of the pneumothorax and 12 weeks after the tooth extraction. This suggests that the trouble arose from without and not from within the lung.

Against gastric ulcer perforating the diaphragm must be placed the extreme rarity of the occurrence. Mayo Robson has only seen it associated with subphrenic or perigastric abscess. Moynihan has never met with a case. Fenwick[1] says that direct perforation of the diaphragm by gastric ulcer is very rare and only once recorded at the London Hospital in 40 years. He quotes Biach, who found that out of 918 cases of pyopneumothorax only two were due to perforation of a gastric ulcer. Fenwick[2] also says that "perforations of the diaphragm almost invariably terminate fatally."

The symptoms of perforation of a gastric ulcer into the pleura as recorded by Fenwick are: Sudden severe pain in the left side of the chest, dyspnœa and collapse, stabbing pain on deep inspiration, friction sounds, dulness on percussion, displacement of the heart, immobility of the lower chest, absence of vocal fremitus, vocal resonance, and vesicular murmur, vomiting, and rise of temperature. If pneumothorax occurs the left side of the chest is distended, the heart is displaced, percussion is hyper-resonant, bruit d'airain is present, and metallic tinkling and succussion sound can be produced. It will be noticed that all these signs, except vomiting, were present in my case.

If the cause was an inhaled tooth it is very remarkable that there were no signs of bronchial irritation and that, when we consider the long history of months or years of cough and expectoration in most cases, in this case the first symptom was due to perforation into the pleural cavity.

Finally, as to treatment, whatever the cause, the only thing to be done was free drainage of the empyema.

Bedford.

[1] Ulcer of the Stomach, p. 68.
[2] Loc. cit., pp. 351 and 352.

A CASE OF NEPHROLITHOTOMY, WITH A NOTE ON THE USE OF THE URETER CATHETER.

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BEFORE cutting down on any tumour in the right loin it is necessary to know the condition of the left kidney. For the tumour may prove to be a diseased kidney, for which the best treatment is removal. The following case well illustrates the value of the ureter catheter in obtaining this definite indication of the capacity of the left kidney to perform its function.

A married woman, aged 32 years, a patient of Dr. J. J. French, Waterhouses, was admitted on July 24th, 1909, complaining of a painful swelling in the right loin. She gave the following account of her illness. A month previously, on rising in the morning, she experienced a sudden and severe pain in the right loin. It extended into the right labium. The pain was paroxysmal, and at times its severity made her vomit. Micturition was painful, and at times stopped and then went on. The pain in the right side never completely left her, and was greater when she lay on that side. Walking about caused an increase in the pain.

On admission the patient was delicate in appearance and very weak. The temperature was 102° F. and the pulse 128. The right lumbar region of the abdomen was occupied by a painful and tender swelling of about the size of the fœtal head at birth. The swelling did not move with respiration. On percussion it was dull in the front, at the sides, and behind. The urine contained pus, thick and in large quantities. On July 25th the bladder was examined with Nitze's catheterising cystoscope, and by its aid a ureter catheter was passed along the left ureter and a specimen of urine obtained from the left kidney. The specimen contained a little pus but not so much as the urine from the bladder. The amount of urea was 12½ grains to the ounce.

On July 29th ether was administered by the open method. An oblique incision was made in the right lumbar region, parallel to and an inch below the last rib. The swelling was found to be the kidney, containing in its pelvis some pus and a stone. An incision was made in the pelvis of the kidney and the stone removed. As there was some tension on the pedicle the kidney was returned to its bed in the loin. The space round the kidney was drained by a tube. The patient eventually made a good recovery, but it is of interest to note that after replacing the kidney, during the days after the operation there was considerable rise of temperature from infection of the perinephric tissues. If we had been able to keep the kidney outside the wound the rise of temperature might have been avoided, but the tension on the pedicle seemed rather too great when the kidney was out of its place.

From the information the ureter catheter gave us we were enabled to be certain that the left kidney was present, and, although not perfectly healthy, was capable of secreting urine containing 12½ grains of urea to the ounce. As it was quite possible that the swelling in the loin might be the right kidney, and so much diseased as to necessitate removal, it was of high importance, before undertaking any exploratory operation, to have the above information about the left kidney. The small amount of pus in the urine obtained by the ureter catheter from the left kidney showed that some disease was present there, and that every endeavour should be made to save the kidney of the opposite side. As the mixed urines from the bladder contained a considerable amount of pus there was a possibility if Luys's separator had been used that one of the tubes might have become blocked by the pus. The possibility of this occurring was one of the reasons which prevented my using that instrument, for when one tube—say the left—is blocked all the urine escapes from the right. This makes it appear that only the right kidney is acting, when it is exactly the reverse which is taking place. This error, which may arise in using Luys's separator, can be avoided by driving a little fluid back into the bladder and noticing when it escapes from the tube of the other side. If this is done with a tube and a funnel the septum within the bladder can be tested at the same time. The uncertainty which arises in using Luys's separator has led me to employ it less and less, but if there is no thick deposit in the urine and if the cystoscope shows the floor of the bladder to be without sacculi or other irregularities, the results obtained by the separator may be relied upon.

It is well to remember that the ureter catheter may cause slight hæmaturia or a wrong conclusion will be drawn from the presence of a little blood in the specimen obtained through its employment. The hæmorrhage is apt to occur if there is any rough surface on the catheter or if the catheter is left in the ureter over-night. For this reason, in cases of hæmaturia it is best at first not to use the ureter catheter but with the cystoscope to watch carefully the ureter openings and see from which the blood is escaping. The ureter of the other side can then be catheterised to ascertain whether the kidney on that side is good enough to do all the work.

Although there must be some danger in passing a foreign body along the ureter, yet since 1904, when I first began to use the ureter catheter, there has been no evidence of renal infection following its use in my cases. Certain precautions, I think, in a measure contributed to this good fortune. 1. Both ureters were very rarely simultaneously catheterised. If the patient and the urine have previously been thoroughly examined a sample of urine from one kidney is generally all that is required as a guide to the proper treatment. 2. The bladder was distended with oxycyanide of mercury (1 in 10,000). This greatly diminishes the possibility of living micro-organisms being carried by the ureter catheter into the ureter. Working on these lines, I am coming gradually to the conclusion that the certainty of the information which the ureter catheter gives more than compensates for the slight risk it entails.

Newcastle-upon-Tyne.

A CASE OF ACUTE CEREBRO-SPINAL MENINGITIS WITH SEVERE CHOREIFORM MOVEMENTS.

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THE patient was a coloured boy, aged 15 years, who attended the out-patient department of the hospital on Jan. 20th, 1909. He complained of very severe headache and pains in the back and limbs. On the previous day he felt and looked quite well and went about his usual work as house boy. In the early morning hours of Jan. 20th he woke up crying out with pain in the head. Subsequently he walked to the hospital, a distance of about a mile, and arrived in a rather exhausted condition, looking extremely ill. With the exception of the usual infantile illnesses he had always enjoyed good health. The family history was good.

When the boy was first seen the pulse was rapid and full; the temperature was 103° F., and the tongue was covered with thick white fur. The abdomen appeared slightly distended and was tympanitic, but no tenderness or rigidity was elicited. The examination was rendered difficult on account of the extreme restlessness of the patient. Being at the height of the enteric fever season, a rather "brainy" type of that disease was suspected, although the suddenness of the onset rather contradicted such a diagnosis.

Soon after admission the patient became semi-delirious, throwing himself violently from side to side and giving vent to a peculiar wailing cry. Morphine was quite useless in quieting him, but more success followed the exhibition of bromide and chloral in small doses at frequent intervals. On Jan. 21st his temperature was normal at 10 A.M., but his general condition was decidedly worse. The pulse was almost uncountable and the heart sounds at the apex beat were such that it was impossible clearly to differentiate the first from the second sound without timing by the carotid pulse. The cardiac dulness extended to the right of the sternum. The respirations were forcible and increased in frequency, and coarse râles were audible over the front of the

chest. Movement, which on the previous day could only be called restlessness, now became continued with hardly a moment's cessation. These, which can best be described as choreiform, were chiefly confined to the arms and legs. The limbs were constantly flexed and extended and in addition to this the arms were frequently thrown in a purposeless manner across the chest. The movements were so persistent that it was found necessary to bandage the feet and elbows over cotton-wool to prevent ulceration at the heels and elbows. At the same time the half-open eyelids became œdematous and the conjunctivæ injected. The left cornea was dull and slightly opaque. The pupils were fixed and unequal, the right pupil being markedly dilated. The eyes were frequently rolled from side to side and a divergent squint was present. On raising the head the neck muscles were slightly rigid, but there was no retraction. It was impossible to be definite about the knee-jerks, ankle clonus, or plantar reflex, as any attempt to elicit them was met by violent movements of the legs. Kernig's sign was not obtained. The sphincters were relaxed, the patient having incontinence of urine and fæces from the first. The stools were dark-greenish, semi-liquid, and rather offensive. There was no discharge from the nose or ears and no marked pharyngitis. The patient vomited once after a nasal feed.

As his illness occurred during the height of the enteric fever season it was at first suspected to be a case of that disease, but this surmise was soon abandoned, as all the symptoms pointed to an acute meningitis. Lumbar puncture was performed and some faintly turbid fluid which oozed out of the cannula drop by drop was collected in a sterilised test-tube. The patient was totally unconscious of the procedure.

At 10 P.M. on Jan. 21st he had a rigor and his temperature rose from normal to 103·2° F., subsequently falling to 101·8° after careful sponging. At 2 A.M. on Jan. 22nd his temperature was 104·4°, again being reduced by sponging to 100·2°. By this time the pulse had become very feeble, rapid, and irregular, and the breathing was slightly stertorous, rapid, and laboured, the mouth being kept half open. At 2 P.M. his temperature rose to 106° and he died shortly afterwards. Taking as the onset of the illness the time when he first complained of symptoms the duration of the illness was about 60 hours.

Necropsy.—At the post-mortem examination the brain was found to be very soft and was slightly lacerated during removal. The dura mater was bound down by fairly firm adhesions to the underlying cortex over a circular area about four inches in diameter, the centre of which corresponded roughly with the mid-point of the longitudinal fissure. The adhesions, although fairly firm, were quite recent. Pus was found along the larger blood-vessels and in the sulci of the convex surface of the brain. There was no actual pus on the summits of the convolutions, but here the pia mater was very injected and had a dull filmy appearance. The injection and presence of pus were most marked over the area corresponding to the adherent dura mater, which included the upper half of the Rolandic area on both sides. It is thought that this condition explains the severe choreiform movements of the arms and legs which were a remarkable feature in the case.

The cerebral veins were very distended, being about three times their normal size. A small amount of greenish-yellow pus was found at the base of the brain, in the fissures and along the blood-vessels. On opening up the lateral ventricles they were seen to be markedly dilated, but only a small amount of turbid fluid was found, this no doubt being explained by the diffluent state of the brain and injury on removal. No abscesses were found in the brain. Some of the pus was removed on a sterilised platinum needle and a film made. On examination of the spinal cord no actual pus was found, but the posterior spinal veins were extremely engorged and the pia mater was injected. On removal the cord was found bound down by many recent adhesions.

The lungs were partially aerated throughout; there was no tubercle. On section frothy serum oozed out of the cut surface. There were recent pleural adhesions on both sides. The only other pathological changes were softness and flabbiness of the heart, a pulpy condition of the spleen, which, however, was of normal size, and a mottling of the liver due to irregular yellow patches, which were not raised. On section these patches were seen to be clearly marked off and appeared to be areas of fatty degeneration.

In the fluid obtained, as already mentioned, by lumbar puncture the cellular elements consisted of a few lymphocytes and a large number of polymorphonuclears. Several deeply stained diplococci were found for the most part lying in the faintly stained protoplasm of the polynuclears in groups of from one to four pairs of cocci, although diplococci were also found lying free. Immediately on the fluid being collected a sloped agar tube was inoculated with some of it and incubated at 37°C. In 48 hours minute glistening transparent colonies were visible on the surface of the agar. As growth proceeded the colonies remained separate and disc-like, losing somewhat their transparency and becoming of a faint yellow tinge. Stroke and stab subcultures in agar were made but no growth was obtained. On examining films prepared from the culture it was found that the diplococcus was present in pure culture. The organism stained readily with methylene blue and carbol fuchsin, but was definitely Gram-negative. The organism showed in culture the same appearance as in the cerebro-spinal fluid with the exception that in the former tetrad formation was common. Involution forms were also present, some of the cocci appearing swollen, while others were elongated, giving the diplococcus the appearance of a bacillus with a gap in the centre. On special staining for capsules the edges of the cocci appeared quite sharp and distinct and there was no sign of a capsule. The organism present was considered to be Weichselbaum's diplococcus intracellularis meningitidis.

For permission to publish these notes I am indebted to Dr. Tennyson Oates.

Port Elizabeth.

TWELVE SUCCESSIVE CASES OF PERFORATION OF THE STOMACH OR DUODENUM, WITH ELEVEN RECOVERIES.

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IT is less than thirty years since the first operation for perforated gastric ulcer was performed by Mikulicz, and less than twenty years since the first successful operation was done by Kriege. To-day there are many surgeons who can record series of cases with recoveries of 50 per cent. or more. This important advance is largely due to accuracy of diagnosis and early operation, but not entirely so; for with improved technique, and by adopting measures to prevent the more lethal complications, one gets into the habit of regarding the outlook in a hopeful way.

Personally, I attach great importance to rapid operation, the avoidance of irrigation of the peritoneum, and free drainage on lines already laid down,[1] followed by elevation of the patient's body, early feeding by the mouth, and the administration of continuous saline solution per rectum immediately after operation. Inasmuch as subphrenic abscess and empyema are frequent remote causes of death, I would emphasise that it should be the rule to drain the right and left subphrenic regions in every case of perforated gastric or duodenal ulcer with extravasation, as well as the suprapubic region. This matter was dealt with more fully in the paper referred to.

In the light of present experience it is interesting to refer to the opinions of surgeons expressed 15 years ago at the annual meeting of the British Medical Association held in Bristol, when the subject of perforations of the stomach and duodenum was discussed, and up to which time only half a dozen successful cases had been recorded. They were all agreed that: 1. The surgeon should postpone operation until any initial shock had passed off. 2. The abdominal cavity should be freely irrigated, "gone over in a methodical method" with "gallons of water at a temperature of 112°." 3. Feeding by the mouth should be avoided afterwards, even for as long as a week. The necessity for all these stipulations has been falsified, and they may now be regarded as all

[1] Brit. Med. Jour., 1907, vol. ii., p. 1565.

harmful. Such is the change in opinion, practice, and results within a few years.

Table of Cases.

(All the perforations were sutured, some also reinforced by grafts. Gastro-enterostomy was performed in 4 cases—2 simultaneously, 2 later.)

No.	Sex and age.	Duration in hours.	Position.	Result.	Drainage, &c.
1	M., 27	8	D., a.	R.	Right lumbar.
2	M., 45	4½	C., p.	R.	Multiple.
3	F., 22	12	P., a.	R.	Multiple; gastro-jejunostomy.
4	F., 19	4½	C., a.	R.	Multiple.
5	F., 21	5	P., a.	R.	Pyloroplasty through ulcer.
6	F., 27	6	D.	R.	Multiple.
7	M., 64	5	C., a.	Died.	,,
8	M., 35	4½	P., a.	R.	Multiple; gastro-jejunostomy.
9	M., 32	2	P., a.	R.	Multiple; gastro-jejunostomy six months later.
10	M., 65	Few.	P., a.	R.	No drainage; gastro-jejunostomy.
11	F., 25	18	C., a.	R.	Multiple.
12	F., 44	7½	D., a.	R.	,,

P. = Pylorus. C. = Cardiac end. D. = Duodenum. a. = anterior. p. = posterior.

Clifton, Bristol.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

CLINICAL SECTION.

Exhibition of Cases.

A MEETING of this section was held on Jan. 14th with Mr. A. PEARCE GOULD in the chair.

Mr. J. E. ADAMS showed a case of Thoracoplasty for very large empyema. The patient was a male, aged 23 years, who was admitted to St. Thomas's Hospital under the care of Dr. T. D. Acland, on May 29th, 1908, with three weeks' history of illness. There were signs of pleural effusion occupying the whole of the left side of the chest and displacing the heart to the right so that its pulsation extended from the right margin of the sternum to the mid-axillary line. Aspiration gave exit to seven pints of greenish-yellow, sweet-smelling pus. A few hours later two inches of the seventh rib were resected, and three pints more of pus escaped, and a quantity of thick fibrin was removed. A rubber drainage-tube was left in the wound. A pure culture of the pneumococcus was obtained from the pus, and the patient was treated with a stock pneumococcic vaccine. Three weeks later the discharge was slight, but there was very little evidence of expansion of the lung. The heart was still displaced far beyond the right border of the sternum. A second operation was performed, the patient being placed on the right side with the left arm drawn across the chest. A long incision parallel to the vertebral border of the scapula and one inch behind it, terminating in the original wound, was made. Large portions of the sixth to the ninth ribs, together with the intercostal muscles and the parietal pleura, were removed. The superficial muscles divided by the primary incision were freed from overlying skin and the lower muscle-flap pulled over the tenth rib and sutured with catgut to the diaphragm and the base of shrunken lung. The scapula was pushed into the pleural cavity and the muscles attached to its vertebral border were secured to the lower part of the lung with catgut stitches. In 10 weeks healing was complete. The lung expanded rapidly, and the heart returned to its normal position. 18 months after operation the left lung was expanded from the apex to the upper border of the ninth rib; the deformity of the chest consisted only in a slight convexity of the spine on the side of the lesion, and the general health was excellent.—Mr. PEARCE GOULD said that an interesting point about thoracoplasty was the varying amount of deformity resulting due to causes which he could not explain.—Mr. C. H. FAGGE believed that the results in the present day of the operation of thoracoplasty were not better than they were 25 years ago.—Professor OSLER said he did not agree with Mr. Fagge. He (Professor Osler) was brought up in the days when cases of empyema did not go to the surgeon, they went to the post-mortem room. Nowadays the physicians diagnosed the cases early and the patients were transferred to the surgeon. One important reason why empyema cases did not do well was that the surgeon was called in, operated, and then did not see the case again.—Mr. A. E. BARKER considered that the good result was due to the operative treatment being carried out early. In the case of children the expansion of the lung in cases of the kind was common after evacuation, whereas in adults there was a very different story.—Mr. ADAMS, replying to a question put by Professor Osler, said that pulmonary gymnastics had not been applied in the case.

Mr. HEATON C. HOWARD showed a case of Stricture of the Rectum treated by injections of Fibrolysin which were given about three times a week. He considered that there had been arrest of the growth of the fibrous tissue and that a certain amount of absorption had taken place with lessening of the pain which had been severe.—Dr. LEONARD WILLIAMS described a case of sciatica which had been successfully treated by fibrolysin, and Mr. A. CARLESS said he had seen a case of Dupuytren's contraction in which he had given iodolysin by the mouth with the result that after six months the fingers were much more moveable.—Mr. HERBERT TILLEY said it had been suggested that fibrolysin should be administered in cases of so-called dry catarrh of the ear, and extraordinary results had been reported to have been obtained in these peculiarly intractable cases, but it must be noted that these great successes occurred in the dark regions of the body not visible to the eye. He asked if, in the case treated by Mr. Carless, there had been any recurrence.—Mr. CARLESS replied that if there had been any recurrence he would most certainly have seen the case.—Mr. BARKER could not say he had seen any advantage in the use of fibrolysin, though he had noticed one or two disadvantages.

Cases were also shown by Mr. TILLEY, Mr. SOMERVILLE HASTINGS, Dr. F. PARKES WEBER, Dr. H. MORLEY FLETCHER, and Dr. W. ESSEX WYNTER.

LARYNGOLOGICAL SECTION.

Exhibition of Cases and Specimens.

A MEETING of this section was held on Jan. 7th, Dr. DUNDAS GRANT, the President, being in the chair.

Dr. G. C. CATHCART showed a case of Occlusion of the Nostril by Deflection of the Septum in a girl aged 7 years.

Dr. ANDREW WYLIE showed a man, aged 32 years, with Ulceration of the Right Tonsil and Pillars of the Fauces; the condition was believed to be tuberculous; the apices of both lungs were affected.

Dr. WATSON WILLIAMS showed a case of Laryngeal New Growth for Diagnosis. The patient, who was a man, aged 63 years, had been complaining of cough, expectoration of phlegm, and hoarseness for two years. Examination of the larynx revealed a pink, irregular, nodulated neoplasm involving the left arytenoid eminence and the left ventricular band of the posterior surface of the left side of the epiglottis, extending to the glosso-epiglottic fold. It projected over the glottis so as completely to conceal the greater part of the left vocal cord. Both cords moved freely on phonation. Two small, hard, moveable glands were felt behind and above the angle of the jaw on the left side of the neck. The condition had not altered much, nor had the man's general health suffered, since the first observation two years ago. The opinion of the meeting was in favour of slow-forming malignant disease not calling for operation.

Mr. CHICHELE NOURSE showed a case of Endothelioma of the Ethmoid in a woman aged 29 years. The right nostril was blocked by a smooth red swelling, which seemed to be the much enlarged inferior turbinal body. At an operation performed on Dec. 16th, 1909, the antrum was found to contain polypi, and had a thick degenerated lining which was easily detached from the bone, leaving a roughened surface. A pedunculated growth of the size of a small walnut projected downwards into the nasal cavity from the anterior part of the ethmoid. Microscopic sections of this growth

showed typical endothelioma. The upper part of the nasal cavity was healthy.

Dr. E. A. PETERS showed a case of Bands between the Eustachian Tube and the Pharynx in a woman aged 29 years. Chronic otitis media existed on both sides. An operation for adenoids had been carried out at the Evelina Hospital 18 years ago. It was undecided to what extent the bands were natural or post-operative.

Dr. DAN MACKENZIE showed a case of General Infiltration of the Larynx, probably syphilitic, in a woman aged 44 years. Hoarseness and occasional loss of voice had existed for the last 19 months, with paroxysms of dyspnœa. She had improved under iodide of potassium.

The PRESIDENT showed a case of Destructive Ulceration of the Hard and Soft Palate in a young male adult, with exfoliation of a large mesial sequestrum, apparently of specific origin, in a tuberculous subject.

The PRESIDENT also showed a case of Growth in the Nasopharynx in an elderly female. It was like very pale "adenoids," but much more dense in consistence, and suggestive of malignancy. Microscopical examination revealed the structure of a granuloma.

Mr. SECCOMBE HETT showed a case of Extrinsic Carcinoma of the Larynx in a man aged 65 years. He had been admitted into University College Hospital in June, 1909, having had dysphagia for six weeks. Examination made by Mr. Herbert Tilley showed a large rounded greyish-white mass immediately behind the free portion of the epiglottis and completely filling the entrance to the larynx. The larynx proper was free from disease and the growth probably sprang from the region of the aryepiglottic fold or the base of the epiglottis. The whole appearance was that of an epithelioma. On June 14th, 1909, Mr. Wilfred Trotter performed an operation which consisted in laryngotomy, dissection of the anterior and posterior triangles on the right side, longitudinal pharyngotomy after resection of the ala of the thyroid and the cornu of the hyoid, and excision of the growth.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—A meeting of this society was held on Jan. 14th, Dr. H. Cooper Pattin, the President, being in the chair, when Mrs. Sidney Webb read a paper on the Minority Report of the Royal Commission on the Poor-laws in its Relation to Public Health and the Medical Profession. At the preceding meeting of the society Dr. Major Greenwood had addressed the members upon the Reports of the Commissioners as they were viewed by Poor-law medical officers, and on April 8th Mr. C. S. Loch will deal with the Majority Report.—Mrs. Webb said that the Minority Report proposed so far as the provision for the sick was concerned to put an end to the present duplication and overlapping between the Poor-law medical service and the Public Health service; to merge both in a unified medical organisation for each county and county borough, and to place this unified service under the supervision, not of the Poor-law division of the Local Government Board, but of a newly constituted Public Health department, acting not through any Poor-law or Public Assistance authorities, but through the Public Health committees of the directly elected town or county councils. She pointed out that what the Poor-law medical service was instituted for, what it still aimed at, and what it secured, was the diminution of individual suffering. It did nothing, and by its very nature could do nothing, to prevent the occurrence of disease. The Public Health medical officer, on the other hand, could deal with the case in its incipient stage irrespective of whether the patient was or was not too ill to go to work. Above all, there was an important difference between the Poor-law and Public Health departments in the psychological reaction. The irony of the Poor-law medical service was that the better it became the more harm it did to the character of those whom it sought to benefit. For every increase in its efficiency was a standing temptation to men and women to become destitute, or to pretend to do so, in order to qualify for the treatment which the State provided only for the most thriftless or the most unfortunate of the working classes. The Poor-law medical service could do nothing to induce a person who was just beginning to go down in health to adopt those habits of personal hygiene which alone would prevent him from becoming ill, and therefore becoming destitute. It was known from actual experience that the Public Health service in its relation to sickness, instead of having a pauperising effect positively promoted physical self-control, stimulated self-maintenance, and increased the consciousness of parental responsibility. The Minority Report proposed that the whole responsibility for enforcing parental obligations, preventing neglect, and ensuring the necessary minimum of provision for maternity and infant nurture up to school age should be placed upon the local health authority, which would combine for this purpose the present scattered services of birth notification, infant visitation, midwifery supervision, the milk depôt and school for mothers, and the control over abortifacients. It proposed to take the sick person altogether out of the Poor-law and to make the Public Health department exactly as responsible for the treatment of all cases of tuberculosis, cancer, and rheumatism that would otherwise go untreated as it was to-day for small-pox and typhoid fever. The recommendation of the Minority Report was for the establishment of a unified medical service in each county or borough of sufficient size under the direction of the public health committee of the council, having the necessary staff of whole-time salaried medical officers, including clinicians as well as sanitarians, institution superintendents as well as domiciliary practitioners, empowered to give domiciliary treatment and to make the necessary provision for home aliment and nursing wherever domiciliary treatment was judged expedient, the whole work being under the national supervision of a separate Public Health department in London, administering a grant in aid of public health expenditure and in substitution of the existing grants in aid to the boards of guardians of not less than five millions sterling. —In the discussion which followed there was a very general agreement with the main principles laid down by Mrs. Webb. Dr. J. H. H. Manley feared that Mrs. Webb thought that medical officers of health were capable of doing more than they were able, and he would view with concern their return to curative medicine.—Dr. George Reid pointed out that this was not intended, but that they should supervise the work of the clinicians.—Mr. F. E. Fremantle could not imagine county councils taking over the new work as they were at present constituted, and he thought that there should be a new body formed analogous to the education committee.—Dr. John Robertson considered that the initiative of the Poor-law medical officers had been crippled in every direction and the reason that the Public Health service was superior to the Poor-law service was because the latter had been sapped of its vitality by the central authority.—Dr. H. Meredith Richards pointed out that many cases of sickness were not considered serious by the individual though they might be very serious indeed from the point of view of the State.—Dr. William Butler urged that many persons were deterred from seeking medical aid owing to the dread of having to pay for the treatment offered; for this reason any treatment to be successful must be compulsory.—Dr. Sidney Davies considered that an actual economy would result in the early treatment of disease.

ÆSCULAPIAN SOCIETY.—A meeting of this society was held on Jan. 14th, Mr. C. Gordon Watson, the President, being in the chair.—Mr. W. Girling Ball read a paper on the Use of Vaccines in Acute Streptococcal Infections. He said that a correct clinical diagnosis was the first point of importance in all cases of acute streptococcal infection. The next point was the bacteriological diagnosis, for bacteria were the initial cause of by far the larger proportion of diseases. Streptococci were responsible for the diffuse and spreading inflammatory processes which affected the skin, for the diffuse variety of cellulitis, for the larger proportion of cases of puerperal sepsis, for lateral sinus thrombosis, for general peritonitis due to a perforation of the appendix, and for acute tonsillitis. In laboratory diagnosis cultivations in all cases should be made from three situations—namely, (1) from the initial lesion of the infection; (2) from any secondary foci that might be found; and (3) from the circulating blood stream. In all cases film and cultural preparations should be made, and if a mixture of micro-organisms was found these should be separated from each other, for it was only from pure cultures that vaccines should be prepared. Stock vaccines, except in very few circumstances, should never be used in acute streptococcal infections. As regards dose, in order to produce a good effect in a case in which it was possible that the resistance of the tissues might be so diminished as to give rise to a general infection, it was desirable to introduce so small a dose

of vaccine as would be sufficient to produce a reaction with a minimum of negative phase—in fact, no negative phase at all, but rather a positive phase, and to stimulate a summation of these without an intermediate lowering of the immunising powers. Mr. Ball then described in detail the results which had followed the inoculation of vaccines into the tissues of patients suffering from various acute streptococcal infections. As the result of extended investigation he had arrived at the following conclusions: 1. Vaccine-therapy was a useful adjuvant to surgical methods in cases of streptococcal bacteriæmia. 2. In cases where no further surgical methods could be used to relieve the condition of the patient a vaccine might prove of considerable value. 3. Vaccines might do good in conditions in which antistreptococcus serum had failed. 4. Autogenous vaccines were the ideal agents for treatment, but where such could not be obtained a vaccine prepared from a stock micro-organism, or a mixture of the same, could be used with advantage. Such a vaccine should be prepared from a micro-organism which was commonly known to be the cause of the particular lesion to be dealt with. 5. The more acute and the more severe the lesion and the condition of the patient the smaller should the dose of vaccine introduced be, and *vice versâ*. 6. Small doses of vaccine given frequently were more advantageous than large doses given at longer intervals. 7. The guides as to the lines of treatment varied with each case, the variations in the temperature and the general condition of the patient being the most important tests.

Reviews and Notices of Books.

Manual of Surgery. By ALEXIS THOMSON, F.R.C.S. Edin., Assistant Surgeon, Edinburgh Royal Infirmary, Surgeon to the Deaconess Hospital, Edinburgh; and ALEXANDER MILES, F.R.C.S. Edin., Assistant Surgeon, Edinburgh Royal Infirmary, Surgeon to Leith Hospital. Third edition, revised and enlarged, with 339 illustrations. London, Edinburgh, and Glasgow: Henry Frowde and Hodder and Stoughton. 1909. Two volumes. Vol. I., pp. 886; Vol. II., pp. 861. Price 10*s.* 6*d.*

AT one time it was possible to speak of the surgery of the different schools of medicine: the teaching of London was not that of Edinburgh, and both of these differed from what was met with in Paris or Vienna. Though that time has gone by and the teaching of the various schools has become much more uniform, yet even in the present day differences may be detected, and therefore it is always of interest to examine the text-books which emanate from other centres of medicine than our own. This hand-book of surgery has now reached its third edition, and the authors have evidently expended much time and trouble in reducing into so small a compass all the great bulk of surgical knowledge of the present day. We have not been able to detect any important omission; even such a little used contrivance as Sauerbruch's pneumatic chamber for operations on the thorax is mentioned. The wealth of illustrations adds greatly to the value of the work, for the objects depicted have been carefully chosen, and for the most part they are peculiar to this work and have not done duty previously in any other volume. The employment of a fair-sized type necessarily has enlarged the size of the book, but its issue in two volumes to some extent makes the work more convenient, general surgery being treated in one volume and special surgery in the other.

We have nothing but praise to give to this work; and though there are many points on which difference of opinion may occur, the points are comparatively unimportant and their existence does not detract from the value of the book. We hope that the authors will permit the book to resist the very natural tendency to grow which is exhibited by all successful works. The enlargement is doubtless in part due to an increase in the extent of our knowledge, but in part it results from a wish to treat more fully some subject which has become prominent. Many a book is spoiled by being allowed to get too big, and especially in books intended for students the old proverb is more than occasionally true that a great book is a great evil. By all means let the work be kept up to date, but judicious excision of that which is no longer of importance or value might accompany with equal step the addition of that which is new. We are glad to see the appearance of a third edition and hope that in the future the work will continue to attain that success which it deserves.

The Principles of Clinical Pathology. A Text-book for Students and Physicians. By Dr. LUDOLF KREHL, Ordinary Professor and Director of the Medical Clinic in Strassburg. Authorised translation from the fourth German edition. By ALBION WALTER HEWLETT, M.D., Assistant Professor of the Principles and Practice of Medicine at the Cooper Medical College, San Francisco, California. With an introduction by WILLIAM OSLER, M.D., Regius Professor of Medicine at the University of Oxford. Second edition. London: J. B. Lippincott Company. 1909. Pp. 520. Price 21*s.* net.

Professor Krehl's book in the later German editions has been published under the title of "Pathological Physiology," but the translator has retained the title of the first edition, which is given above, because he is of opinion that the term "pathological physiology" is unfamiliar to English and American practitioners, and because it seemed desirable to emphasise that the book deals with problems which come under the notice of the clinician. In this country, however, the term "clinical pathology" has come to be used in the somewhat restricted sense of the application of laboratory and experimental methods to diagnosis. Professor Krehl's book is something more than this: it is a study of the functions of the body and of its organs under pathological conditions, so that strictly the title of pathological physiology more accurately defines its scope. Professor Osler, in a brief commendatory introduction, expresses its general character by describing it as an attempt to fill the gap between empirical and scientific medicine, disease being studied as a perversion of physiological function. To the thoughtful student and practitioner it should appeal strongly, since it endeavours to explain the phenomena of disease on scientific principles, takes nothing for granted, and points out in critical fashion where our knowledge is incomplete. Although speculation and hypothesis must of necessity be considered in regard to such complex processes as vital functions these are always presented as such and are usually critically discussed.

The first three chapters are devoted to the heart, the blood-vessels, and the blood; the fourth to a consideration of the problems of infection and immunity, the account given being readable and critical, but not prolix or lumbered with unnecessary technicalities. The problems presented in connexion with respiration and digestion are then considered in separate chapters. Nutrition and metabolism and the effect of their derangements are next dealt with. The subject of diabetes receives consideration at some length in a special chapter, in which the various forms are carefully differentiated. Gout and disturbances of purin metabolism are next discussed. In an interesting chapter on fever, its general phenomena are carefully studied and its significance is considered. The problems involved in diseases of the kidney and of the nervous system are also dealt with.

The editor states that he has not attempted a literal translation, but that he has endeavoured to maintain the spirit of the original work. He has added notes on some subjects which are enclosed in parentheses, notably in regard to blood pressure, arrhythmia, surgical shock, and hæmorrhagic pancreatitis. These notes help to increase the value of the book, and the editor is to be congratulated on the manner in

which he has carried out his task. We can heartily commend the book as an interesting and suggestive work.

Text-book of Gynecological Diagnosis. By Dr. GEORG WINTER, with the collaboration of Dr. CARL RUGE. Edited by JOHN G. CLARK, M.D., Professor of Gynecology, University of Pennsylvania. After the third revised German edition. Illustrated by four full-page plates and 346 text illustrations in black and colours. London and Philadelphia: J. B. Lippincott Co. Pp. 670. Price 25*s.* net.

THIS text-book by Professor Winter and Professor Carl Ruge has a well-established reputation on the continent, and the appreciation which it has met with is shown by the fact that it has passed through three editions. Dr. Clark has therefore done English and American students a good service by translating it, and has also added to its value by his editorial notes. The book consists of three parts: the first is devoted to general diagnosis, and includes a description of all the various methods which may be employed in forming a diagnosis of a gynæcological case; the second part is concerned with the special diagnosis of the various affections of the pelvic organs, including the diagnosis of pregnancy; and the third part treats of the special causes of such general conditions as hæmorrhage, amenorrhœa, and dysmenorrhœa under the heading of analytical diagnosis.

Under the head of general diagnosis the portion dealing with the importance of the microscope in the determination of the nature of many gynæcological affections is particularly good, as is also the description given by Hunner, and quoted by the editor, of the use of Kelly's endoscope in the diagnosis and treatment of bladder affections. The normal anatomy, both macroscopic and microscopic, of the female genital organs is exceedingly detailed, and is illustrated by many excellent drawings. A good example of the manner in which the book is written is furnished by the chapter dealing with the differential diagnosis of an extra-uterine gestation. The authors where necessary quote illustrative cases to emphasise the various points laid down. A discussion on the microscopic diagnosis of pregnancy occupies some 35 pages, and is of the utmost value. The many sources of fallacy and error are shown, and the pathologist, no matter what his experience, could not fail to derive considerable help from a study of this section. In the diagnosis of prolapse of the uterus the assistance to be obtained by the use of the cystoscope is well illustrated by some coloured pictures of the appearance of the bladder in such cases. There are some good cystoscopic pictures in the sections dealing with the diagnosis of the spread of carcinoma of the cervix, and of inflammations of the bladder, with the effect upon this organ of inflammatory exudates in its neighbourhood. At the present day there is a growing tendency on the part of gynæcologists to dispense with the use of the sound, and no doubt such a tendency is a step in the right direction. At the same time it must be remembered that in the case of many pelvic affections the sound is a most important aid in coming to a correct diagnosis, and that its use, when carried out with proper antiseptic precautions, is attended with the minimum of risk. For example, in the diagnosis of some forms of fibromyomata of the uterus a positive diagnosis cannot be made without its aid.

An interesting case is recorded in which a cystic fibroid tumour of the uterus showed that very rare condition, intermittent contractions simulating pregnancy. The frequency with which the pain in cases of fibromyomata is in reality associated with inflammatory lesions is brought out in the figures quoted of 57 such cases, of which in 19 there was some inflammatory condition of a neighbouring organ. The great difficulty which may attend the diagnosis when carcinoma of the body is associated with fibromyomata of the uterus is well known. Of 11 cases quoted in only one-third did the diagnosis rest on a secure basis before operation. The difficulty in diagnosing sarcomatous changes in uterine polypi or in interstitial fibroids is still greater and naturally so, and in only one of ten cases of this degeneration was a correct diagnosis made by the authors. There is a valuable diagram on p. 324 demonstrating the changes produced in the folds of Douglas by retro-uterine and intraligamentary tumours of the ovary. Unfortunately, the folds cannot always be felt, but when they can this sign is of value. If the fold is in front of the tumour the latter occupies Douglas's pouch, while in the case of intraligamentary tumours the fold is pushed backwards and towards the median line. Considerable stress is laid on a mode of examination which we fear is still to a large extent neglected by many gynæcologists—namely, the cystoscopic examination of the bladder to determine whether it is invaded by cancer or not. In the early stages of involvement of the bladder mucosa the mucous membrane swells and forms thick parallel folds which gradually increase in height, leaving deep depressions between them, while in a more advanced stage the mucous membrane becomes œdematous and covered with vesicles, producing the appearance of a bullous œdema.

When we recollect that the chapter dealing with the microscopic diagnosis of malignant disease of the uterus, vagina, and vulva is written by Professor Carl Ruge, the creator and assiduous promoter of this method of examination, we are not surprised at its excellence. The pitfalls in the way of a correct diagnosis of cancer of the uterus from microscopic examination are very numerous and need a long and special training to avoid. How grave may be the result of such an error is apparent, and it is not sufficiently borne in mind that special experience must be needed in many cases, and that, further, the clinical findings must be carefully correlated to those obtained by microscopic examination. Although, no doubt, but little help is to be expected in the advancement of our knowledge of the ultimate causes of cancer from the histological examination of cancerous tumours, yet such examinations have lost none of their importance for the clinician; and at the present day, when the great importance of an early diagnosis of this disease is universally recognised, careful microscopic examination of small portions of tissue or of scrapings removed by an expert is of greater necessity than ever if mistakes are to be avoided.

We have indicated a few of the many good features of this work, and the translator has done good service in placing it within the reach of those English and American students who are unfamiliar with the German language. The translation on the whole has been well done, but we could wish that such words as "percutory," "vaginism," and "myxoid" had not been employed, or rather invented, by the translator. Not one of them is to be found even in the "Century Dictionary," although that work is published under the superintendence of an American professor of philology. But the original book is one of great merit and this translation should prove of value to many.

Untersuchungen über die pathologische Anatomie der Beri-Beri: Ein Beitrag zur normalen und pathologischen Anatomie des peripherischen Nervensystems. (Researches on the Pathological Anatomy of Beri-Beri: A Study of the Normal and Pathological Anatomy of the Peripheral Nervous System.) By Professor HERMANN DÜRCK, of the Pathological Institute of the University of Munich. With 58 chromolithographs, 20 photographic prints, and 4 illustrations in photo-lithography on 41 plates after the original drawings by Karl Dirr. Jena: Gustav Fischer. Pp. 176. Price 25 marks.

Professor Dürck is already well known by his writings as a careful and painstaking scientific worker in the field of pathology and anatomy. The present volume, which is

remarkable for the number, beauty, and precision of its coloured illustrations, forms the eighth supplement to the "Studies of Pathological Anatomy and General Pathology," edited by L. Aschoff of Freiburg i.B., and F. Marchand of Leipsic. In the preface Professor Dürck sets out the circumstances which gave rise to his undertaking these researches on beri-beri and which led him to spend some six months or more in the East Indian Archipelago and the Malay Peninsula studying the disease clinically and collecting pathological material from fatal cases for detailed histological investigation. At the beginning of the book the author discusses shortly the etymology of the word "beri-beri," the pathological anatomy of the disease, and its etiology, passing in review the many various causes which have been at one or another time suggested as the origin of this malady. His own view is that there is no specific causative agent, but that the symptoms may arise from more than one cause.

The normal histology of the peripheral nervous system is then fully described, after which the pathological anatomy of nerve degeneration and neuritis is considered, including traumatic degeneration and regeneration, neuritis and multiple neuritis not of traumatic origin, and lastly the involvement of the spinal cord in cases of multiple neuritis. The author comes to the conclusion that the degenerations which are brought about by beri-beri in the peripheral nervous system are not specially characteristic of that disease alone, but rather that they are common to various forms of multiple neuritis arising from different causes. Professor Dürck's careful researches have resulted in a very valuable contribution to our knowledge of the histology of the peripheral nervous system in health as well as in disease. One special result of his investigations to which the author gives some prominence is that altered and degenerated nerve tissue may under certain conditions become regenerated. He contends that "so long as the organism is able with its reduced nerve filaments to maintain a *minima vita*, so long will it, if the injurious influences which gave rise to the changes be removed, be capable of complete *restitutio ad integrum*," and the whole nerve can again become conductive; so that if a beri-beri patient be freed from the noxious cause or causes which give rise to the disease, the nervous structures can regain their normal condition and resume the exercise of their function as before. The newly formed tissue which results from the degenerative process in beri-beri is not, as was formerly supposed, connective tissue, but is in reality nervous tissue which has lost some of its differential characters. One small mistake we observed in Professor Dürck's introduction is a reference made to Dr. C. W. Daniels, whom he met in Selangor, and who is described as "now of the Liverpool School of Tropical Medicine." It is, as our readers know, the London School which claims Dr. Daniels as its present director.

LIBRARY TABLE.

Wanderings Among South Sea Savages. By H. WILFRED WALKER. London: Witherby and Co. 1909. Pp. 254. Price 7*s.* 6*d.* net.—Mr. Walker's wanderings comprised journeys in Fiji, New Guinea, the Philippines, British North Borneo, and Sarawak, so that he has gained experience of some very little known portions of the globe. His book is written in an easy pleasant style and he gives his readers much interesting information upon the manners and customs of the various tribes among whom he journeyed and dwelt. Incidentally the medical reader will come across items more particularly concerning his own subjects. Thus on p. 19 he says that he saw in Taviuni a heart of a wild pig, "which when killed was found to have lived with a broken point of a wooden spear, fully four inches in length, buried in the very centre of its heart. It had evidently lived for many years afterwards and a curious kind of growth had formed round the point." In 1902 he accompanied a punitive expedition against the Doboduras, a cannibal tribe who had been raiding another tribe, the Notus, who were nominal allies of the British Government. The former are a simple people with a preference for fresh meat. So when they take a prisoner they tie him to a post and cut pieces off as they are wanted. Hæmorrhage is prevented by a special preparation of their own manufacture. Finally, when he is nearly dead they make a large hole in the side of his head and feed on the warm raw brains. Readers of Kipling will remember Challong, the webby-footed "Orange Lord," who is mentioned in the story entitled "The Disturber of Traffic." Mr. Walker heard rumours of such a race and set out on an expedition to see them. They are called the Agai Ambu and live in a swamp up the Barigi river, and, like the founders of Venice, they appear to have taken to the swamp as a refuge from their enemies. Mr. Walker describes them as having singularly thin, flat feet, with the toes more webbed than normal, and he quotes a detailed account of them from a report made by Sir Francis Winter, the acting governor of British New Guinea. The legs of the people, says Sir Francis Winter, are disproportionately short and thin. They are very expert swimmers and "can glide through beds of reeds or rushes, or over masses of floating vegetable matter with ease." We are grateful to Mr. Walker for a very readable and instructive book.

Monthly Gleanings in a Scottish Garden. By L. H. SOUTAR. London: T. Fisher Unwin. 1909. Pp. 192. Price 6*s.* net.—*The Gardener's Companion.* By SELINA RANDOLPH. London: Mills and Boon, Limited. Pp. 156. Price 2*s.* net.—Gardening is, as we have said before now, a restful occupation, for both expectation and fulfilment are soothing. The above two books deal with gardens from different points of view. Miss Soutar takes the year month by month and gives her readers a charming series of word pictures as to the flowers and birds which inhabit her garden, a garden, by the way, which makes us envious as we read. We are rather surprised to note that she makes no mention of one flower which is the glory of many a Scottish garden, although it can only be grown with difficulty in the south-east of England—namely, the Tropæolum speciosum, with its wealth of brilliant scarlet flowers. Miss Randolph's book is severely practical and easy to follow. Should anyone wish to have a garden we recommend him to read Miss Soutar's book to see the kind of garden which is desirable, and then to study Miss Randolph's book to learn how to get it. Those of our profession who may remember the gardens of the late distinguished physicians, Dr. Vivian Poore and Dr. Lionel Beale, know well what pleasure a garden may be to a medical man.

An A B C of Nursing in Accidents and Illnesses. By E. M. CLARKE, C.O.M. Revised and corrected by P. BARNETT-BENTLIF, M.R.C.S. Eng. London: The Scientific Press, Limited. Pp. 62. Price 1*s.* net.—This little work is a curious mixture of sense and nonsense. Some of the instructions are good, but in some instances they are foolish if not harmful. As an example of the good we may instance the remarks on vaccination and hygiene. As an example of the foolish we quote the following from the account of croup: "At the first sound of the croupy cough, give the child hippo (*sic*) wine and squills, half a teaspoonful of each every half-hour till he vomits. If he gets worse, call a doctor, and put the child in a hot bath in front of the fire for five minutes; then wrap him in a warm blanket; give the hippo wine and squills every ten minutes till the doctor

comes." Apart from the administration of such an extraordinary drug as "hippo wine," what is meant by half a teaspoonful of squills? The official dose of powdered squills is from one to three grains. Again, it might very well be that at least an hour might elapse before the medical man could arrive, so that the unfortunate child would have received three drachms of squill in some form or other, a presumably fatal dose in the form of the powder and highly depressing in any other form. Of the effects of "hippo wine" we confess our ignorance, but in regard to the squill Mr. Barnett-Bentlif should not have allowed such directions to pass muster.

Christian Healing. By T. FARMER HALL. London: Robert Culley. Pp. 72. Price 6*d*.—In this pamphlet Mr. Hall gives "the words and facts of the New Testament on the subject and some arguments and conclusions to be drawn from them." His main conclusion is that the gifts of healing granted to the primitive Church were only given temporarily, and of those who have studied the matter as given in the Gospel as to the words and works of our Lord he says, "While faithfully availing themselves of such means of healing as He has placed at their disposal in the knowledge and skill of their fellow men, they will confidently and trustfully leave the issues to Him." As a set off against the absurdities of so-called "Christian Science" Mr. Hall's pamphlet deserves study.

The Science Year Book, 1910. London: King, Sell, and Olding. Pp. 112 and diary. Price 5*s*.—Several alterations have been made in this, the sixth, issue of the "Science Year Book," which enhance its value as a book of reference, though it is doubtful whether the omission of the short biographical directory which formed a useful feature of previous editions can be considered an improvement. The additions to the book include a map of coming solar eclipses, details of airships and aeroplanes, and a chart of the track of Halley's comet. The usual notes, tables, and diagrams relating to astronomy, biology, chemistry, physics, meteorology, and so forth, are given, together with a short summary of the progress of science during 1909, and a glossary of recently introduced scientific terms. The diary portion of the publication, which provides a blank page for every day, has been slightly enlarged by the transference to what is called a "monthly ephemeris" of the astronomical and meteorological details which formerly were placed at the top of each page of the diary. A useful feature is a square opening in the front cover of the book which allows a monthly calendar to be seen through it. A reproduction of a photograph of Sir Archibald Geikie, President of the Royal Society, forms a frontispiece to the diary.

JOURNALS AND MAGAZINES.

Proceedings of the Royal Society of Medicine. Vol. III., No. 2. December, 1909. London: Longmans, Green, and Co.—This number opens with the Section of Anæsthetics, in which Dr. V. B. Orr contributes an interesting note, with a bibliography, on Heart Massage in Heart Failure during Anæsthesia, and is unfortunately obliged to sum up with the remark that a careful search through the recorded cases has failed to discover any instance, save one of Mr. Charles Stonham's, where massage has been successful in a case of primary anæsthetic heart failure, uncomplicated by any possible reflex shock or inhibition, although the procedure has apparently saved life when syncope has been threatened from such a cause as reflex inhibition from traction on the mesentery. The Clinical Section has a sad interest in that it contains the text of the resolution of sympathy to Mrs. Clutton passed by the members of the section on the death of the late Mr. H. H. Clutton, and also the late Dr. T. D. Savill's last contribution to clinical medicine—a note on a case of Sclerodermia of the Extremities associated with a previous and family history of Angioneurotic Œdema. Other cases are recorded by Mr. A. Carless, Mr. A. Pearce Gould, Dr. H. D. Rolleston and Dr. G. H. D. Carpenter, Dr. A. S. MacNalty, Mr. T. H. Openshaw, Mr. W. Gifford Nash, Mr. Arthur Evans, and a case of Pneumococcic Colitis with Hyperpyrexia and Severe Hæmorrhage treated by Appendicostomy, with local improvement, although the patient died from cardiac failure. The chief contribution to the Electro-Therapeutical Section is the paper by Dr. E. R. Morton on the Treatment of Nævi by Electricity, Cautery, and Refrigeration by Solid Carbon Dioxide, which has appeared in full in THE LANCET. Mr. H. G. Armstrong contributes to the Epidemiological Section a communication on the Case-incidence in Nine Epidemics of Measles at a Public School, with notes on the Pre-eruptive Symptoms. The Medical and Neurological Sections contain papers by Dr. F. Craven Moore, in association with Dr. R. L. Ferguson, on the Rôle of Fats in the Treatment of Disorders of the Stomach, and Sir William Gowers's recent Hughlings Jackson lecture on Special Sense Discharges from Organic Disease respectively. In the Obstetrical and Gynæcological Section Dr. Comyns Berkeley and Dr. Victor Bonney discuss Leucoplakic Vulvitis and its Relation to Kraurosis Vulvæ and Carcinoma Vulvæ. The Odontological Section publishes Dr. J. W. Eyre's and Dr. J. Lewin Payne's paper on the Bacteriology of Pyorrhœa Alveolaris and the Treatment of the Disease by Bacterial Vaccines. The Pathological Section is occupied by two papers, one by Mr. Raymond Johnson and Mr. T. W. P. Lawrence on a Rare Case of Retroperitoneal Teratoma connected with the Spinal Cord, and the other by Professor S. G. Shattock on the Result of Double Oöphorectomy upon the Growth of the Uterus in the Rabbit. The Therapeutical Section is devoted to a paper by Dr. D. B. Lees, of considerable practical interest, on the Physical Signs of Incipient Pulmonary Tuberculosis and its Treatment by Continuous Antiseptic Inhalations, with the Results in Thirty Cases; and a communication by Dr. H. H. Dale and Mr. G. P. Laidlaw on the Action of Apocynamarin (an active principle of Apocynum Cannabinum, an American Rhizome), and of Extract of the Infundibular Lobe of Pituitary Body as Diuretics. The Sections for the Study of Disease in Children and for Laryngology contain, as usual, a number of reports of cases exhibited at their meetings.

Edinburgh Medical Journal.—In the January number is published a paper by Dr. J. Mackie Whyte on the Study of Psychiatry in Munich, in which, among other things, he notes the attention now being paid to Wassermann's test in the diagnosis of nervous troubles, and records that "a negative blood reaction does not necessarily exclude brain syphilis, but is believed to exclude general paralysis"—a view which would seem to contradict a direct specific relation between the reaction and the causal agent of syphilis. Dr. H. M. Church records two cases of Rheumatoid Arthritis, presumably of puerperal origin; and Dr. G. A. Gordon writes on the value of accurate estimations of blood pressure. Dr. James Dundas deals with certain aspects of medical inspection of school children, and Dr. W. Brown contributes some notes on the use of curdled milk, and quotes cases illustrative of its value.

The Bristol Medico-Chirurgical Journal.—In the issue of this magazine for December is published an interesting address by Mr. James Swain on the History and Practice of Surgery in Ancient and Mediæval Times, and one by Mr. G. Munro Smith on "Vis Medicatrix Naturæ." Dr. Maurice Faure writes on the mercurial treatment of tabes dorsalis, which is now gaining ground in France; the method of

choice is by injection of soluble salts of mercury. He emphasises the need for early diagnosis, and the comparatively favourable prognosis of cases thus seen and treated. Dr. Arthur Fells records three cases of pneumonia which showed such unusual complications as arthritis, nephritis, and thrombosis of the femoral vein.

The Dublin Journal of Medical Science.—In the December number Dr. Walter G. Smith deals in a presidential address with Some Relations of Physic to Physics, referring briefly to the principle of mass action and to recent discoveries in the field of rays and radiation. He notes that we now have to recognise two forms of rays—viz., streams of actual particles and electro-magnetic vibrations of the ether. Professor A. E. Mettam deals with Diseases of Animals Communicable to Man, and Dr. Henry Jellett with the Teaching of Practical Midwifery, expressing the fear that "the efforts of the General Medical Council to produce a 'levelling-up' of the teaching in England and Scotland may result in producing a 'levelling-down' in Ireland."

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

MEETING OF COUNCIL.

A QUARTERLY meeting of the Council was held on Jan. 13th, Mr. BUTLIN, the President, being in the chair.

Mr. H. F. WATERHOUSE was introduced and made a declaration in the terms of the oath prescribed by the Charter of 1800, and was admitted a member of the Court of Examiners.

The PRESIDENT reported the death on Dec. 25th of Professor Julius Nicolaysen of Christiania, an honorary Fellow of the College, and stated that he had written to his son, Professor Johan Nicolaysen, to express the sympathy and condolence of the Council.

The Council decided to remove from the roll of Members the name of a Member of the College who had previously been removed from the Medical Register.

The PRESIDENT reported that he had chosen Mr. A. Pearce Gould as Bradshaw Lecturer for the ensuing collegiate year, and he declared Mr. Edmund Owen to be appointed Hunterian orator for 1911.

On the motion of Mr. CLEMENT LUCAS, a committee was appointed to consider and report on the proposals for legislation on the subject of anæsthetics.

The PRESIDENT reported that Mr. Bilton Pollard's period of office on the Court of Examiners would expire on Feb. 9th, and that the vacancy thus occasioned would be filled at the ordinary meeting of the Council on Feb. 10th, Mr. Pollard being eligible for re-election.

The PRESIDENT reported that the vacancy on the Board of Examiners in Dental Surgery, occasioned by the retirement of Mr. Bernard Pitts from the Court of Examiners, would be filled at the meeting of the Council in February.

The SECRETARY reported that Mr. Edgar Jones of Great Burstead, near Brentwood, admitted a Member of the College in 1834, had recently attained the age of 100 years. The President was requested to write and congratulate him.

A letter was read from the Registrar of the General Medical Council forwarding a revised copy of the Council's recommendations in regard to dental education and examination, and calling attention to the Council's resolution of Nov. 27th, 1909, that every candidate for a Licence in Dentistry or Dental Surgery shall be required to produce a certificate that he has attended a course of instruction in the "administration of the anæsthetics usually employed in dental surgery."

It was resolved—

That the General Medical Council be informed that the Council of this College on June 10th, 1909, adopted a regulation requiring that all candidates for the Licence in Dental Surgery of the College entering at a recognised dental hospital or school after October 1st, 1909, should be required to produce a certificate "of having attended at a recognised dental hospital and school a course of practical instruction in the administration of such anæsthetics as are in common use in dental surgery."

Two letters were read, one written by the President, after consultation with the Vice-Presidents, to the Lord President of the Privy Council, on the subject of the working of the Midwives Act, and the other received in reply.

[PRESIDENT'S LETTER TO PRIVY COUNCIL.]

Royal College of Surgeons of England, Lincoln's Inn Fields, W.C.
15th December, 1909.

SIR,—In July, 1906, the Council of this College drew the attention of the Lord President of the Privy Council to the fact that no adequate provision had been made in the Midwives Act for the "Remuneration of Medical Men summoned on the advice of Midwives," and they contended that the Act would not work efficiently until such provision had been made. The uncertainty as to the payment of medical men under these circumstances has thus far been attended with grave injustice to the medical men who have been summoned; with great anxiety to the midwives who have summoned them, lest they should fail to obtain assistance when it was most needed; and with consequent danger to the poor women for whom assistance was required.

The Council of the Royal College of Surgeons therefore view with great satisfaction the recommendations (with the exception of No. 7) on this subject (*b*), which are contained in the "Report of the Departmental Committee appointed by the Lord President of the Privy Council to consider the working of the Midwives Act, 1902," and earnestly trust that the Report will lead to the introduction of an Amending Act early in the course of the next session.

With regard to No. 7 of the Recommendations, the Council would point out that the onus of obtaining the fee would be thrown upon the medical man who had been summoned by the midwife, and that he might even be compelled, in accordance with the Recommendations, to attempt to recover his fee in court before he could claim it from the local authority.

The Council of the Royal College of Surgeons also desire to express their satisfaction with the Recommendations in the Report which deal with Prematurely-born Children (*d*. 6) and with those which refer to Ophthalmia Neonatorum (*d*. 7). The number of cases of blindness which are due to that form of Ophthalmia is very large, and many of the individuals who thus become blind are a permanent burden to the State.

I am, Sir, your obedient servant,
HENRY T. BUTLIN, President.

Sir Almeric FitzRoy, K.C.V.O.,
Clerk of the Privy Council.

[REPLY FROM PRIVY COUNCIL.]

Privy Council Office, London, S.W.
17th December, 1909.

SIR,—Referring to your letter of the 15th instant, I am directed by the Lord President of the Council to say that His Lordship notes with satisfaction that the recommendations of the Midwives Act Committee on the subject of the "remuneration of medical men summoned on the advice of midwives" (with one exception) commend themselves to the Council of the Royal College of Surgeons.

With regard to the recommendation to which exception is taken (see paragraph 80 of the report), I am to request you to be good enough to call the attention of the Council to the evidence of Mr. J. Smith Whitaker, who was a witness on behalf of the British Medical Association (Nos. 5605–8, 5718–9), Dr. Woods (Nos. 1692–5), and Dr. Hope (3034–8). A perusal of that evidence will probably satisfy your Council that the interpretation they have placed upon the recommendation in question (which is described by Mr. J. Smith Whitaker as "a desirable and reasonable arrangement") is a somewhat strained one, and that the intention of the recommendation was not to cast on the medical man "the onus of obtaining the fee," but merely to secure that he shall at least test the patient's willingness to pay before applying to the Poor-law authority for payment of his fee.

I am, Sir, your obedient servant,
ALMERIC FITZROY.

The President of the Royal College of Surgeons of England, Lincoln's Inn Fields, W.C.

THE JOHN HERBERT WELLS FUND.

THE following is the eleventh list of subscriptions to the John Herbert Wells Fund. Further contributions will be gratefully received by the Earl of Dalhousie and Mr. Julian G. Lousada, honorary secretaries and treasurers of the fund, at 16, Old Broad-street, E.C., or by ourselves at this office:—

	£	s.	d.
A Friend	20	0	0
Her Grace the Duchess of Westminster	5	0	0
Mr. H. Warren Crowe	1	1	0
Some of Dr. Wells's out-patients at the Inoculation Department, St. Mary's Hospital (per Miss F. E. Longstaffe)	5	0	0

ADAMS *v.* POMEROY.

Dr. L. Garrett Anderson, the honorary secretary of the fund (114A, Harley-street, London, W.), has already received £64 1*s*. 6*d*., and will have much pleasure in acknowledging further help towards the completion of the fund. About £100 are required.

	£	s.	d.
Miss Lila Greig	0	9	0
Mr. F. C. Poynder	2	2	0
Dr. M. W. Manuk	0	10	6

THE LANCET.

LONDON: SATURDAY, JANUARY 22, 1910.

Medicine and Education.

THE first annual report of Dr. G. NEWMAN, the chief medical officer of the Board of Education, just issued to the public, is a document which fully confirms the expectation that great national benefits will be derived from the systematic medical inspection of schools and scholars, and affords ample demonstration that the control of this inspection, and its application to purposes of practical utility, have been committed to an eminently judicious and capable official. Dr. NEWMAN commences his work by a historical sketch of the circumstances which gradually called public attention to the sanitary aspects of schools and teaching, as well as to the fact that the necessary assembling together of children for the purposes of instruction afforded exceptional opportunities of studying the rising generation in the mass, and of considering how far the children composing it were likely to surpass, to equal, or to fall short of the physical and intellectual standards of their parents or more remote ancestors. In this connexion he does full justice to the admirable work of Sir JAMES CRICHTON BROWNE in calling attention to the evil consequences of the mental over-pressure which he believed to exist in the public elementary schools of London, as well as to the inspections of Dr. FRANCIS WARNER and to the evidence collected by Sir SHIRLEY MURPHY and other medical officers of health concerning the occurrence of infectious disease in relation to school attendance. The first practical step in the direction of dealing with the questions hence arising was taken by the appointment of a medical officer, Dr. W. R. SMITH, by the School Board for London in 1890, an example which was followed in 1893 by the Bradford school board, who appointed Dr. JAMES KERR to a similar office, "and thus initiated a medical administration which has been of marked and continuous excellence." In 1902 Dr. KERR succeeded Dr. SMITH in London; and his annual reports to the County Council may be taken to represent the high-water mark of medical influence upon the course and conduct of education. The reports of the Scottish Royal Commission upon Physical Training, and of the Inter-departmental Committee on Physical Deterioration, served forcibly to direct public attention to the state of the children of the nation, and revealed the existence in many classes of a marked degree of physical unfitness, if not of actual and progressive deterioration. The Committee recommended that a systematised medical inspection of school children should be imposed as a public duty on every school authority, and this recommendation was accepted by the Government. By the Education Act of 1907 the duty was laid upon the authority "to provide for the medical inspection of children immediately before or at the time of their admission to a public elementary school, and on such other occasions as the Board of Education direct, and the power to make such arrangements as may be sanctioned by the Board of Education for attending to the health and physical condition of the children educated in public elementary schools." Dr. NEWMAN points out that this clause involved the adoption of two principles: in the first place, that the most important features in the physical condition of the child should be systematically ascertained; and, in the second place, that authorities should at least have the power of attempting to make the health of the child such that he could profit by the instruction provided for him. While, however, the medical inspection of children was imposed as a duty on the local education authority, the further treatment of those suffering from any ailment was left as a power which the authority might exercise under certain conditions.

By this arrangement, the organisation of inspection was placed upon an entirely different basis from the organisation of treatment, and there were great and manifest advantages in bringing the former into intimate relation with the machinery and with the purposes of the public health service, which was already in being, and which had been built up as the fruit of a long period of legislation and administration. It was manifest, in fact, that the school medical officer must either work as an official of the general sanitary service or independently of it, and that, in the latter case, overlapping and waste of effort, even if not actual opposition, were practically certain to occur, more especially in relation to the temporary closure of schools during epidemics. The recommendations of the Board of Education with regard to this matter have almost universally been followed by the local education authorities, who have in one of two ways made arrangements in accordance with the advice of the Board. Either the authority has appointed the medical officer of health of its area to be the school medical officer, and in this way has secured the unification of the two medical services, or it has arranged for the work of the school medical officer to be intimately coördinated with that of the public health service. The former arrangement has been made in 224 of the 307 areas for which a school medical officer has been recognised by the Board, and in 76 of the remaining 83 the school medical officer is appointed either to be under the supervision of the medical officer of health or directly to coöperate with him. Even in the remaining seven some degree of effective coördination, either personal or administrative, is the rule, and the Board has continued to lay stress upon the necessity of obtaining it; a necessity which is daily confirmed by experience. School hygiene cannot be divorced either from home hygiene or from the general health conditions of the community; and many matters which arise in the work of the school medical officer fall by statute within the province of the medical officer of health. The intimate relation between the two branches of sanitary administration can only be ignored or neglected at the cost of inefficiency or failure, and hence the Board has felt itself responsible for securing that the necessary coördination shall obtain. Its action in this respect has

received increasing support from local authorities as these have more and more appreciated its importance. It has, of course, been found necessary largely to strengthen the public health service for the performance of the new duties cast upon it; and in the 307 areas referred to there were, at the date of the report, a total of 1084 medical officers in the whole school service of England and Wales.

The grave remaining question, that of the treatment of the many ailments disclosed by medical inspection, is still surrounded by difficulties from which a way of escape has to be discovered. We have more than once laid down the principle that schooling being compulsory it is the duty of the public to secure that it shall not be actively injurious to those who are compelled to submit to it. There can be no doubt, of course, that the "over-pressure" described by many observers, and not always in strictly moderate terms, was injurious to a proportion of the children subjected to it; and, especially in the presence of common ocular conditions, much of the reading, writing, and needlework done in schools was open to similar condemnation. The community has no right to inflict injury under the guise of benefit. There can be no doubt that such injury has been inflicted, or that the enthusiastic "educators" of the nineteenth century, who believed in "schooling" as a panacea for all national evils, were as unconscious as NEWTON'S dog Diamond of the amount of mischief which their good intentions might be instrumental in accomplishing. At present the great difficulty is to combine the proper treatment of the maladies disclosed by inspection with a due preservation of a sense of parental responsibility and independence. The report gives much reason to hope that some of the most prevailing maladies, such as caries of the teeth and the morbid conditions produced by the presence of vermin, will be greatly diminished by the influence of the instruction concerning the importance of cleanliness which is even now being given to the children, and as to the practical effects of which the statements of both medical men and teachers are distinctly encouraging. The remaining maladies are chiefly ocular and aural troubles, favus, ringworm, adenoids, and tuberculous affections, and for all these it would seem necessary that some provision should be made by public authorities. In London, as is well known, temporary arrangements have been made with certain hospitals, but it remains to be seen whether these will stand the test of experience. They are likely to involve payments to the institutions which, sooner or later, may give rise to claims to interference in the management of the institutions; they will probably require the addition to the ordinary staff of officers appointed for the special purpose and not likely to attain permanent positions, and the distances between the schools and the hospitals must usually be considerable and often prohibitory. The establishment of school clinics, largely officered by the school medical officers themselves, to the expenses of which the parents should be made to contribute according to their means, remains as the alternative. To enforce contributions where they should be forthcoming ought not to be difficult, since the ailing child might be refused admission to the school, and the parent proceeded against for not taking the necessary means to bring it into a position to attend.

The Mechanism of Labour.

THERE are some great questions in medicine which are always before us; their importance is so obvious and the occurrence of clinical emergencies affected by them is so frequent that debate is persistent. One such question is the mechanism of labour.[1] The history of the mechanism of labour begins about the middle of the eighteenth century with the discussion as to the manner in which the head of the fœtus enters the pelvic brim. At this period the old theory of DEVENTER, that before the onset of labour or in its early stages the child, up to this time presenting by the breech, underwent a complete rotation so that the head entered the pelvis with the occiput looking directly forwards, a view which was based upon the position which the head assumed on its exit from the pelvic cavity, was held still by some writers, including LEVRET and RODERER. Sir FIELDING OULD in the year 1742 was the first obstetrician to point out that the head entered the pelvis in the transverse diameter, and that while the chest of the child was apposed to the sacrum of the mother its face was turned so as to have the chin directly on one or other of the shoulders. OULD did not describe the passage of the head through the pelvis, but his advice, when the birth of the head was delayed on the perineum, to exert pressure on the chin through the rectum showed that he recognised a change in the position of the head at the moment of its birth. It was left for SMELLIE to describe in further detail, and in many respects most accurately, the mechanism of labour. SMELLIE was well acquainted with the variety of unreduced occipito-posterior presentations and with the manner in which their reduction normally occurred. In his writings, too, we meet for the first time with a correct conception of the effect of the general intrauterine pressure on the expulsion of the fœtus, while he also described the method of carrying out manual rotation of the head when it presented transversely at the outlet of the pelvis.

About the year 1764 MATTHIAS SAXTORPH published a work on the mechanism of labour, in which he pointed out that the head entered the pelvic brim most commonly in one of the oblique diameters and not, as SMELLIE thought, in the transverse. He and his master, BERGER, had not only observed this fact clinically but had confirmed their observations by the dissection of the dead bodies of pregnant women. It is, indeed, probable that the name of Solayrés' obliquity usually given to this position of the fœtal head should rather be Berger's obliquity, since there can be little doubt that he was its original describer. SAXTORPH, like SMELLIE, attributed the forward rotation of the occiput to the influence of the bony pelvis and mainly to the action exerted upon the descending head by the ischial spines. It is interesting to note that ROBERT WALLACE JOHNSON, a pupil of SMELLIE, also described the entrance of the head into the pelvic brim with "the face a little towards the sacrum." SOLAYRÉS DE RENHAC in 1771

[1] A Critical Inquiry into the Causes of the Internal Rotation of the Fœtal Head, by R. H. Paramore, M.D. Lond., Journal of Obstetrics and Gynæcology of the British Empire, No. 4, 1909.

was the first writer accurately to define the various presentations of the head, as he was the first to point out the influence exerted by the position of the occipito-atlantal articulation in producing flexion of the head of the fœtus, and the manner in which the propulsive force exerted by the uterine contractions was communicated through the spine of the fœtus. He also was the first to describe the external rotation of the head in conformity with the internal rotation of the shoulders. JANUS BANG, a pupil of BERGER, described in 1774 the entrance of the shoulders into the pelvis in the opposite diameter to that of the head, and the external rotation of the latter with the internal rotation of the shoulders. In 1819 appeared the important work of Fr. C. NAEGELE, in which the mechanism of labour was described fully and the relative frequency of the various presentations pointed out. NAEGELE, like his predecessors, attributed the forward rotation of the occiput to the influence of the bony pelvis, a view which held its own for many years, and which undoubtedly holds true even at the present time as an explanation of the mechanism of labour in some conditions. NAEGELE'S views obtained recognition not only among his own countrymen but also influenced obstetric thought and writers in many countries. The presence or absence in normal labour of the obliquity called by his name is, indeed, still a matter of discussion and one which is likely so to remain.

In any description of the mechanism of labour the question about which a difference of opinion is most likely to arise is the causation of the internal rotation of the head in its passage through the pelvis. The study of frozen sections of pregnant women has rendered the primary movement of so-called flexion clear, and there is little doubt as to the causation of the movement of extension by which the head emerges from the pelvic cavity or of the movement of external rotation which it undergoes after its escape. Of late years, however, the conditions found in some frozen sections have tended to throw doubt upon the usual explanation given of this external rotation of the head. It is, however, principally with regard to the movement of internal rotation and its causes that writers have differed, and, indeed, even at the present day the matter is far from being settled. We have seen that the earlier obstetricians held that it was determined by the shape of the bony pelvis, and, indeed, there can be no question that this has some influence. The shape of the bony pelvis will not, however, explain the rotation forwards of the occiput in an occipito-posterior presentation, and for this reason, among others, VARNIER in 1888 pointed out the inadequacy of this hypothesis to explain entirely the mechanism of labour. In seeking an explanation for these cases VARNIER, and more especially VEIT, laid great stress upon the part played by the soft structures of the pelvic floor. For them and for their followers the internal rotation of the head is determined by the action of the inclined plane of the pelvic floor and the shape of the opening in that floor. And, indeed, the classical experiments of DUBOIS and of others lend great support to this view—a view which is accepted by a great many obstetricians at the present day as sufficient and correct. To meet the difficulty of explaining the fact that rotation of the occiput forwards in occipito-posterior presentations occurs when it might be expected that the action of the pelvic floor would as readily cause a rotation of the forehead forwards, the action of the contractions of the uterus in causing rotation of the trunk has been called into play to assist, and indeed, according to some writers, to initiate the rotation of the head. Thus the uterine contractions are held to cause flattening of the uterine cavity from before back, and so to cause a rotation forwards of the fœtus placed obliquely in that cavity. The rotation of the back of the fœtus forwards is held further to be favoured by the projection of the spine of the mother, tending to prevent its rotation backwards. The objections to this view are furnished mainly by a study of frozen sections, which undoubtedly show, at any rate in the majority of instances, that the rotation of the fœtal head precedes and does not follow the rotation of the trunk.

In an attempt to overcome the objections which may be urged both to the view that the pelvic floor plays the main part in causing rotation, and to the further view that the action of the pelvic floor in producing this movement is assisted, if indeed the movement is not initiated, by the contractions of the uterus, SELLHEIM has advanced another theory based upon the conception of the adjustment of the fœtus as a whole to the parturient canal. In this view the internal rotation of the head is attributed to the unequal flexibility of the fœtal axis in various directions, so that in its passage through the curved pelvic canal the fœtal body bends itself in conformity to the curves of the birth canal. By means of a number of very ingenious models SELLHEIM has attempted to prove his contention that the fœtal head can be bent backwards to a greater extent than in any other direction and that this is due to the tone of the large group of extensor muscles on the back and neck. He also regards the position of the fœtal head before the onset of labour as one not of extreme flexion but as one midway between flexion and extension. In the early stages of the passage of the head through the pelvic canal as a result of the flexion of the head which occurs the tension of these extensor muscles is increased. As the fœtal cylinder therefore passes down through the bent birth canal the occiput rotates forwards in conformity with the bend of the canal in this direction, and because the extensor muscles of the neck are tending to undo the position of flexion of the head which is present during the descent of the head into the pelvic brim. In an inquiry into the causes of the internal rotation of the fœtal head PARAMORE criticises SELLHEIM'S views and brings forward the objection that the conditions of the experiments are not analogous to those obtaining in the living woman. He argues that this hypothesis is disproved by the fact that in cases where it is certain that the bony pelvis exercises no influence upon the position assumed by the fœtal head—namely, where the head is unduly small or the pelvis unduly large—this rotation of the occiput often does not occur, that is, in the very cases in which, according to SELLHEIM'S view, it should occur most frequently. OLSHAUSEN, too, has raised the objection that the rotation of the trunk precedes that of the head, but in this he is not supported by most writers. It is impossible, he writes, to believe that the fœtal trunk, closely embraced as it is by the soft parts, can be caused to rotate

by the movements of the head. If it does not do so then it must rotate independently, and if it does this then it may well influence the rotation of the head and even possibly initiate it. On the other hand, AHLFELD brings forward the objection to OLSHAUSEN'S view that rotation of the head occurs in the first of twins when the uterine cavity is not flattened, and occurs also in the mechanism of labour with the after-coming head.

It seems to us reasonable to suppose that the rotation of the head and the trunk may both be due to the same causes and may take place independently of one another. As Dr. PARAMORE points out, it is difficult to believe, in view of the large degree to which rotation of the head on the trunk can occur normally, amounting as it does to about 90°, that any torsion of the body can influence or cause a rotation of the head. He further maintains there is no satisfactory proof that in occipito-posterior presentations the forehead is on a lower level than the occiput or that it meets the pelvic floor first. When rotation forwards of the occiput fails to occur he regards it as due, not to rotation of the forehead forwards, but to a failure of the normal mechanism which should cause rotation of the occiput forwards. He appears to us to attribute the rotation of the head in occipito-posterior presentations to rotation of the forehead backwards rather than to rotation of the occiput forwards, and lays stress, as did FRITSCH, on the action of the anterior lateral wall of the pelvis in causing rotation backwards of the forehead which is lying in apposition to it and pressed on to it by the uterine contractions. It must be remembered that the anterior rotation of the occiput may occur quite early even before the head reaches the pelvic floor, and therefore any theory which takes into account the action of the pelvic floor alone is not sufficient to explain all cases. It seems necessary to invoke more than one factor to explain the internal rotation of the fœtal head, and the most probable explanation would appear to be that it is in reality due not only to the action of the pelvic floor, but that the shape and varying degree of flexibility of the fœtal head and the action of the uterine contractions in producing rotation of the body of the fœtus must all play a part in different circumstances and may all, indeed, participate in the production of the rotation in a normal case of labour. No doubt when we are in a position to reconstruct all the phases of the movements of the fœtus in its passage through the birth canal from a study of frozen sections we shall be able to give an accurate description of the mechanism of labour, and be better able to demonstrate the accuracy or inaccuracy of the various hypotheses which have been brought forward to explain its causation.

The Position and Method of Science Teaching in Secondary Schools.

THERE exists a considerable body of opinion that the solution of the difficulty of the medical students' curriculum will be found to lie, not in the extension of its time, but in the relegation of the preliminary science subjects to what we may call the ante-natal days of the medical student—that is, to his schooldays. If this plan be generally adopted, as it has already been in a small number of schools, it is obvious that the nature of the elementary science training given to schoolboys will be of great interest to the medical profession, falling as it must under the scrutiny of the General Medical Council. Few medical men will deny the importance attaching to the amount and kind of scientific teaching available at the secondary schools at the present time, for surely a man who is daily occupied in the observation and study of the highest of all natural forms and forces must appreciate more than most the number of "well-educated" men and women who are allowed to grow up without acquiring the slightest knowledge of the physical world, who have no clear conception concerning the structure of the universe, or of the nature of the simplest physiological processes—to whom, for example, "salt" suggests only a condiment of the table, while the word "gas" is limited to the household illuminant or is a reminder of an unpleasant interview with the dentist. Whatever be the intellectual weapons with which the coming generations are to be equipped for the business of life, few will be found to deny that the purely classical education based upon the traditions of Tudor days, and developed by the headmasters of the seventeenth and eighteenth centuries, is destined to be merged into a system of instruction which advancing knowledge has made more truly liberal.

Amongst the first principles of a liberal education we reckon an intelligent, even if elementary, knowledge of natural science, for not only is a conception of "what things are made of"—be those things animate or inanimate—of enormous practical use in nearly every human occupation, but the lifting of the veil which hides the mysteries of force and matter so completely from the ignorant that they do not even perceive them to be mysteries opens to the child's expanding mind a region of interest, of wonder, and in some cases of reverence, which, under wise guidance, cannot fail to broaden his vision and to equip him with such knowledge as is the foundation of true wisdom. Indeed, Professor H. E. ARMSTRONG, the President of the Association of Public School Science Masters, at the annual meeting held last week at Westminster School, advanced so large an estimate of the future part of the science master in our public schools that his audience might have been tempted to believe him guilty of a ponderous compliment, had it not been for his subsequent denunciation of their present methods of teaching and of their unpreparedness to take up the honourable burden which is to fall upon their shoulders until they have undergone a thorough revision upon some such lines as Professor ARMSTRONG proceeded to indicate. The first aim of education, he said, should be to teach youth to see something; at present we are content with teaching it to say something. Science is a recognition of truth, and the expounders of natural truth must prevail over the expounders of words, who merely hold their pride of place in our schools by inheritance from a long line of literary and often anti-scientific headmasters. He continued to speak with asperity about the narrowing effect of the classical education, and quoted this somewhat remarkable passage from a discourse delivered by the late Dean FARRAR at the Royal Institution over forty years ago: "The

question then is, not whether the education is to be literary or scientific, but whether it is to be scientific or nil: the struggle is not between science and literature, but between something and nothing, between science and no science, between intellectual culture and its almost total absence." These are hard words and we do not think they are fair words. For a certain type of boy they may be absolutely true, and the grinding of a refractory mind in the old classical mill is indeed nothing less than tragic in the cruelty it entails on the boy, the disappointment it brings to his parents, and the heartburnings which at least it should cause to a conscientious schoolmaster. But to condemn the whole classical system root and branch even because of a large number of failures is illogical, though we agree that the schooling of the average boy of the middle or upper classes should be remodelled so as to include a respectable training in natural science, though this may mean the abandonment of the study of Greek. But we are entirely hostile to those who would abolish Latin as another dead language, for not only has it a value as a scientific *lingua franca*, but the mere acquisition of many medical terms would become without it a meaningless and laborious task, and, what is also important, it would snap irrevocably the last link which binds our profession to the scholarly traditions of THOMAS LINACRE and Sir THOMAS BROWNE. We do not, indeed, suggest that the mental pabulum that nourished those worthy scholars is desirable for the medical cadet of to-day, for science has so much to teach him that he must be content with but a grounding in the proudly-called "humanities," but *pace* Professor ARMSTRONG, we can see no opposition between a scientific and a "literary" secondary education, and we hope that the preliminary training of boys destined for medicine will in the future be in the best sense of the world literary, or else may medicine cease to hold herself a liberal profession. The shades of SMOLLETT, of GOLDSMITH, of WENDELL HOLMES, and of many others who have gone before us would surely rise up to protest against the exclusion of "letters" from the schoolboy's curriculum, and, in our opinion, those "letters," if he is to follow medicine, should continue to include at least a modicum of Latin, which will always be of use to him and may in his riper years become a source of real pleasure and solace unattainable to the pure scientific specialist.

A considerable portion of Professor ARMSTRONG'S address was occupied by a comparison of the expressed opinions of certain distinguished headmasters on the value or otherwise of a classical staple of education; and, having dismissed their convictions with some contumely and called evidence on the other side, he proceeded to hold up as a pattern the system adopted by our naval training colleges whereby the study of classics is replaced by compulsory manual exercises in the workshops to the fostering, he said, of the spirit of self-help, courage, and alertness, and the development of all the faculties. Turning to consider the actual method of teaching the science which he claims as alone imparting true breadth of mind, this severe schoolmaster of the schoolmasters proceeded to rate them soundly for their present exposition of the experimental method. He charged them with drawing no distinction between demonstrations or practical exercises and experiments, and remarked that "to show an experiment is a contradiction in terms." An experiment is something which a person must try for himself, and the results of which he must record for himself in full and at the time of its performance, and not subsequently, more or less correctly, by an act of memory. Professor ARMSTRONG'S scheme is drastic. The experimental method is to be fostered early, and instruction in chemistry is to form the basis of all scientific teaching, while instruction in physics is to form the next step, for these two are essential to every other branch of science. Geology and a little biology and physiology should be taught, and all these subjects are to be grouped under the general heading of "Experimental Science." Professor ARMSTRONG railed against the so-called nature-study, which he found a "rank and pretentious hybrid" and destitute of any right to its title, but in the syllabus of instruction which he proceeded to unfold, beginning with the contemplation of a pebble and passing on to a piece of rusty iron, there seemed to be a considerable resemblance to the methods adopted by "nature-study" teachers. We need not follow him into this syllabus as it was the same as he gave in outline in a paper which he contributed to the annual meeting of the British Medical Association in 1908, but we may say that it contains many admirable points which could all be adopted and yet leave the schoolboy time to lay the foundations of a good literary education. One of Professor ARMSTRONG'S suggestions was that the teaching of mathematics should be made more practical. In this connexion we may mention a report on the Correlation of Mathematical and Scientific Teaching presented to the meeting by a joint committee of the Mathematical Association and the Association of Public School Science Masters, in which several sensible recommendations are made. For instance, it is suggested that mathematical masters should set problems requiring physical data and expressed in metric units, and practical tests of measurement, weight, and the like bearing on these questions could then be made under the direction of the science masters. This would, we feel sure, make the study of mathematics more attractive to a certain number of boys and more profitable to nearly all. Another excellent suggestion is that in the early teaching of physics the use of formulæ should not be allowed. For instance, when learning about the expansion of solids "the boy should be made to understand that the coefficient of linear expansion is the amount by which unit length expands when heated through unit temperature, and should then make the calculation by the ordinary (unitary) methods." This is shrewd advice, for we have known students a good deal beyond their school days who were content to rely upon formulæ as magical symbols that would solve problems without having any true conception of the principles underlying them. Science studies must always proceed little by little and line upon line; for unless the foundations of a man's knowledge of natural events and sequences are laid secure, he must infallibly come to grief when he seeks to apply his accomplishments. And knowledge can have no application more important to the human race than the modern practice of medicine.

Annotations.

"Ne quid nimis."

A LAY VIEW OF MEDICAL RESEARCH.

THERE is a class of persons, the members of which, not uneducated in other ways, are fond of depreciating scientific research having apparently no practical result. This fallacy and its refutation formed the major part of the text of an address delivered on the sixty-third anniversary of "Ether Day"—i.e., Oct. 16th, 1909—at the Massachusetts General Hospital, by Dr. Charles W. Eliot, the learned Emeritus President of Harvard University. As might have been expected from the occasion, Dr. Eliot considered research in a limited aspect, referring only to medical experiment in connexion with anæsthesia and asepticism. He reminded his audience that those who doubted the value of medical research as connected with experimentation on animals put forward three doubts. Firstly, Has biological research really contributed to the success of the medical art? Secondly, Is the search for truth through experiments on animals justifiable when it is not known that the scientific results, though true, or sound as knowledge, can have any effect on human well-being? Thirdly, Is truth-seeking in biology commendable, even with the help of anæsthesia and asepticism, if the search be conducted at the expense of the comfort, joy, or life of animals? Dr. Eliot answered the first question by bringing forward the advances in knowledge which have accrued to medicine in the cases of vaccination, and serum therapy as used in the treatment of diphtheria, tetanus, and meningitis. As regards the second question he pointed out that many a scientific discovery which seemed at first to have no connexion with medicine has turned out to be of the greatest possible value, and that this holds good quite as much in biological work as in physical. He gave as instances the invention of the compound microscope and the immersion lens which together with the use of aniline dyes have enabled bacteriologists to study the infinitely minute organisms which are the primary causes, so far as we know at present, of disease. Hence, he argues, experimentation on animals is justifiable even although it may not appear at first that the results obtained will have any immediate application to medical and surgical practice. In regard to question 3, he naturally pointed out that animals are killed, and their liberty interfered with in every possible way, by hundreds of people daily, merely for man's personal convenience or pleasure; that, therefore, experimentation upon animals, through which, within the last 60 years, medicine, surgery, and sanitary science have given the largest benefits to men, is at least to be considered equally justifiable. Anæsthesia and asepticism have not only been of service to the animals experimented upon, but their aid has made it possible for results to be obtained which are not vitiated by pain or the failure of an operation. Dr. Eliot's remarks are truisms to his medical brethren, but as it is likely that a portion of his audience were laymen, we congratulate him upon a sound and simple exposition both of the position of scientific workers and of the benefits which have accrued to science from their labours.

LAYING THE DUST BY OIL.

THE introduction of the motor-car has rendered the problem of laying the dust of the streets more pressing, and every medical man regards dust as one of the great foes to health. In America a method has been in use for some years of which little is known in this country—the application of oil to the streets. Like most supposed novelties, this method appears to be very old and to have been employed by the ancient Egyptians. In the *Canadian Journal of Medicine and Surgery* for November, 1909, Dr. C. Sheard, medical officer of health of Toronto, has reported very satisfactory results from its use. The method was forced upon him in combating the dust nuisance on roads in the outskirts of the city distant from the water mains. He used crude petroleum there with such satisfactory results that he extended its use to the macadam roads throughout the city generally. The oil is applied in several relays at intervals of a few days. The number of applications required varies according to the character of the road. If the road is good and free from ruts and not subject to heavy traffic three applications, which are regarded as one oiling, should last from one to three months. But if the road is bad and traversed by heavy drays and wagons the oiling will probably not last longer than one month. The better the road the smaller the dose required. If the road has a high gradient, and is much exposed to the sun, the oil will dry up sooner than if the road is more or less shaded by trees. The oil is lightly sprinkled from a watering cart driven at a fairly rapid rate, so that the drops will be to a great extent separate, and puddles of oil will not be left in depressions. Should these occur they should be swept away with a broom, so that they will not be splashed by the traffic on the clothes of pedestrians. After three or four days a second application is made, and after a week a third. It is an advantage to prepare the road beforehand by cleaning out channels and filling up ruts, but this may not be practicable and is not necessary. Rain does not affect disadvantageously an oiled road; such a road dries more rapidly after a shower. The surface water runs speedily into the channels and the road is improved rather than injured. When the sun comes out the last traces of water are removed and the surface of the road is oily again. Dr. Sheard finds that 1500 gallons of petroleum per mile is sufficient for one oiling (three applications) of an ordinary road; 2000 gallons may be required for a road in bad repair. At 4 cents a gallon for the oil and from 10 to 15 dollars for its application the cost is from 70 to 75 dollars per mile, and in Toronto this is 20 per cent. less than the cost of watering. Oiling has many advantages over water. A watered road dries quickly and in three hours is as bad as ever. Moreover, after traffic it is more damaged and its general appearance is inferior to that of an oiled road. The objection may be raised that the oil has an odour. Dr. Sheard finds that this is little complained of and that it generally passes off in three or four hours.

CHYLOTHORAX.

THE number of recorded cases of chylothorax is so small that every new case is of interest. In the *Yale Medical Journal* for December, 1909, Dr. F. C. Hyde has reported the following case. A man, aged 52 years, was admitted into hospital on May 11th, 1908, for shortness of breath and cough. At the age of 28 years he became addicted to alcohol. Nine years before he came under observation he noticed enlarged glands in the left axilla and in both groins, and later swellings in the neck on both sides. Five years before, whilst singing a high note he felt as if something ruptured in the right supraclavicular fossa and a swelling in this locality suddenly increased in size. Since that time it had slowly grown. In March, 1908, he had a syncopal attack, followed by dyspnœa with severe coughing and general malaise. On admission the temperature was 100° F., the pulse was 100 and of poor quality, and the respirations were 26. The chest was barrel-shaped with a wide intercostal angle and the right half was more prominent than the left, its intercostal spaces bulged and it moved little in respiration. In the

supraclavicular fossa on both sides were large irregular swellings. The larger, on the right side, was 3½ inches in diameter; the mass in the right axilla was 1 inch in diameter, in the left 1½ inches, and in each inguinal region ½ inch. The whole of the right chest was dull, while the left was hyper-resonant, and the cardiac dulness was obliterated by the emphysematous lung. Vocal fremitus was faint on the right side. At the apex of the right lung the breathing was broncho-vesicular; over the rest of the lung the breathing was faintly heard. Over the upper lobe of the left lung fine râles were heard, and over the rest of the lung expiration was prolonged. There was no sputum. The quantity of urine passed in the 24 hours amounted to only 660 cubic centimetres; it was of specific gravity 1020, and contained neither albumin nor sugar, but indican in large amount. Paracentesis of the right chest yielded 700 cubic centimetres of opaque, milky, faintly pink fluid. As the patient showed signs of collapse the aspiration had to be stopped. The sediment of a centrifugalised specimen consisted of fine fat granules and a few leucocytes and erythrocytes. Filaria could not be found either in the fluid or in the blood. From May 14th to June 19th the patient was tapped six times, and 8275 cubic centimetres in all of milky fluid were obtained. The right chest remained dull and the breathing over it was rough vesicular. From June 19th to August 19th paracentesis was performed 13 times, and 39,420 cubic centimetres of fluid were removed. The patient improved and was able to leave hospital and do light gardening.

CLIMATIC IRRITABILITY.

CERTAIN places are said to be "bracing," while others enjoy an unenviable reputation of being enervating, though the latter quality is sometimes described as "soothing." The very antithesis of soothing is the climate too often met with in many resorts on the Mediterranean littoral during winter, where a blend of hot and cold that is disagreeable to the healthy and very trying to the invalid may frequently be experienced. It is common in midwinter in these places for the landscape to be quivering in the hot sun while a piercing wind from the north-east seizes every opportunity—the shade of a palm tree or a wall—to grip the unwary traveller in its fierce embrace to the detriment of his comfort, possibly of his health. The inexperienced laugh at the cautious resident who dons his overcoat in spite of what looks and feels like summer sunshine, but the wages of ignorance is often disease. There is one curious effect of these bitter-sweet climates—namely, a certain irritability of temper that attacks people after a few weeks spent in these surroundings. Ask anyone who has passed three months at Helouan or Algiers, Nice or Mentone, and although he may not admit it as regards himself he will readily concede the truth of this observation on behalf of his friends. Now this irritability is no doubt an outward and visible manifestation of a disturbance of nervous equilibrium consequent on nervous exhaustion. The effect of these rapidly recurring alternations of heat and cold on the nervous system is strictly comparable with that of quick alternations of light and dark on the eye. The bewildered vaso-motor system does its best to respond to the kaleidoscopic indications, but fails and ultimately reacts on the nervous system as a whole. When this symptom declares itself it is time to move on, either further south where the variations of temperature are less marked, or to a higher altitude where the temperature, being low, is more uniform. The latter is the better choice of the two, because no matter how far south one goes, starting from the Mediterranean, much the same difference obtains between the temperature in the sun and that of the wind. The only advantage attending the desert air is that, being absolutely dry, the alternations are less trying than near the coast, where the relative humidity is high.

THE ENGAGEMENT OF MATERNITY NURSES.

NOT for the first time a case has been tried which is of great importance to all maternity nurses, and should prove instructive to general practitioners who are asked to forecast the time of arrival of an expected infant with a view to arrangements being made by the mother. At Kingston county court on Jan. 14th Miss Helen Sneddon, a maternity nurse, sued a gentleman at Wimbledon Park, by whom she had been engaged to attend his wife from Oct. 5th, upon which she of course refused other engagements for the ensuing weeks. She went into residence at his house at the appointed time, but as the baby had not been born by the end of a fortnight she left, after being accused by the expectant mother of having made a miscalculation as to the date of birth. She was, however, able to prove that she had made no error on the data supplied to her, using the ordinary obstetrical tables. The medical man in attendance admitted that the mistake was his, but the defendant tried to lay an equal share of the responsibility on the nurse, who sued for 7 guineas, the agreed fee for her services for the month. The defendant's husband had offered to pay her 2 guineas for the fortnight which she had spent in his house, and to engage her again for 7 guineas when the confinement actually should take place, but she would not accept these terms. The judge held that the plaintiff was entitled to recover, as she had been quite correct in her anticipation of the date of confinement on the facts supplied to her, and as she was in possession of a written agreement. Judgment was accordingly entered for her for 7 guineas and costs. We think that nobody will object to the justice of this judgment. It was certainly a hard case for the defendant, who seems to have behaved in a quite reasonable manner, but no one can blame the nurse for asking what was clearly due to her. It illustrates the great importance of all maternity nurses obtaining a written agreement when undertaking maternity cases. Of course, it is open for the expectant mother not to tie herself down to a definite date, but when this has been done, and the nurse has thereby been precluded from making other engagements, it is clearly right that the contract should be fulfilled on the other side.

THE TREATMENT OF SYRINGOMYELIA BY RADIUM.

IF there is a branch of medicine in which any novel method of treatment ought to be welcomed and generously tested it is that of neurology. The number of cases of a chronic nature with which the practising neurologist is confronted is so considerable that they constitute a reproach. He is powerless to arrest the insidious progress of myopathy or to check the nuclear degeneration of bulbar palsy. Syringomyelia is an excellent instance of a chronic nervous disease of which the chapter on treatment is as yet unwritten. Nevertheless, we owe to our French *confrères* an advance in the therapeutics of that malady that is deserving of serious consideration. Two years ago M. Beaujard and M. Lhermitte published an article on the radiotherapy of syringomyelia in which they announced that exposure of a syringomyelic patient to the action of the X rays had been followed by a recession of the symptoms. Similar results in one or two cases have been obtained by, among others, Professor Raymond. In the *Progrès Médical* of Dec. 18th, 1909, Mlle. Fabre and M. Paul Touchard, of the Salpêtrière, report a series of five cases of syringomyelia handled in an analogous fashion by

exposure to radium, with surprising effect. As our readers may remember, the emanations of radium are known as α, β, and γ rays respectively, the penetrating power of which increases in this order. The α rays are arrested by the skin, whereas the β rays penetrate deeper, and the γ rays will pass through bone itself. For their purpose the investigators employed a flat tray, the surface of application of which was 6 centimetres square, containing 1½ centigrammes of pure radium bromide, and a nickel screen, three-tenths of a millimetre thick, sufficient to allow only β and γ rays to filter through. The applications were made daily to the vertebral column, at various levels, alternately to the right and the left of the spinous processes. At first the duration of the exposure was restricted to 10 minutes, but evidence of the innocuousness of the applications led to their being extended to as long as an hour and a half. The record is certainly an encouraging one. All five cases improved, three of them to a remarkable degree. All showed increased mobility of the limbs, with diminution of stiffness. One patient's hands had been quite helpless, in a *main-en-griffe* position, but after radium treatment she was able to flex, to extend, and to separate the fingers; a second was enabled to resume his work as a draughtsman after six months' disuse of pencil and compasses. Another remarkable fact was the disappearance in one case of the trophic disturbances characteristic of Morvan's disease after exposure to the action of radium during several *séances*. The effect of the metal on the muscular atrophy so frequently noted in syringomyelia was less obvious, as it was also on the variable anæsthesias and analgesias of the disease. The rapidity with which improvement set in is striking. After three or four exposures the "succulent hand" of one case had altered for the better very appreciably and muscular force had returned. Amelioration, in at least two cases, has continued and persisted long after the cessation of radium treatment. From the theoretical standpoint there is reason to suppose that the action of radium on the syringomyelic cord is analogous to its accepted action on neoplastic tissue. By some mechanism unknown to us the rays check the proliferating tendency of the cellular elements of new growths, and on this analogy it is perhaps only in developing cases of syringomyelia that they are likely to be of service.

THE TERRITORIAL ARMY AND ITS SANITARY CORPS.

Dr. H. Peck, the medical officer of health of Chesterfield, who is also an officer in the recently established Sanitary Corps of the Territorial Force, has drawn attention in *Public Health* for December, 1909, to some points in its organisation which deserve notice. Dr. Peck considers that each officer should be attached to a particular unit and should know the extent of the country in which he might be called upon to act if mobilised. This appears to us to be essential. The chief reason for securing the aid of local medical officers of health would seem to be that they are the people who have an intimate knowledge of the sanitary circumstances of some particular locality or area; they should, and would, "know the exact situation of every water-main, public sewer, hospital, and building suitable for a temporary hospital." These should be marked on a map, kept up to date, of which there should be a copy at the local headquarters. These medical officers also would be acquainted with the physical geography and surface geology of the district, matters of great importance in regard to the selection of camp sites. But if the medical officer of Chesterfield is called upon to mobilise in Norfolk or any other part of the country distant from the area with which he is acquainted his special knowledge and experience would be to a great extent wasted. It will not do to say that such a contingency is unlikely. Square pegs have often been put into round holes in the War Office as elsewhere; the arrangements should be made beforehand so that everything and everybody may be prepared before mobilisation takes place and the special experience that is available applied where it will be of the greatest value. The need for camp training is also urged. Many most valuable sanitary officers have not up to the present time had opportunities of gaining practical experience in the management and sanitation of camps; this could readily be afforded. Apparently the provision of uniform for these officers—that is, the issue of an outfit grant—is deferred until mobilisation is actually ordered, but if they are called upon to do any practical work with troops by way of training uniform would appear to be a necessity, in which case the outfit allowance should be authorised. It comes to this, that if the work is meant to be done at all it must be practised beforehand; and if this training is to be military it should be carried out in a soldier-like fashion, which implies the spirit of discipline (not only in issuing but also in obeying orders) that is signified by the wearing of uniform. Dr. Peck rightly considers it an important part of the sanitary officer's duty to give lectures both to officers and men on the main principles of field sanitation; and we presume also that he would give special hints and instructions on the local health conditions of the district—e.g., local water-supplies. In conclusion, Dr. Peck makes a recommendation that the services of inspectors of nuisances should be utilised in connexion with the Territorial Force. Most of them, especially those of the larger rural districts, would make most excellent guides, knowing as they do the short cuts and footpaths; this is a very good suggestion, and we hope the authorities will secure their services.

CONGENITAL ACHOLURIC JAUNDICE.

WE publish on p. 227 of this week's issue of THE LANCET a paper by Dr. F. Parkes Weber and Dr. G. Dorner in which four cases of congenital acholuric jaundice or congenital family cholæmia occurring in one family are recorded. The cases are of the same nature as those described by Dr. F. J. Poynton in a lecture which we published last week and discussed in a leading article. Both series of cases have been investigated by modern methods of clinical research, more especially in regard to the morphology and chemical properties of the blood, and both lend support to the view that the condition is due to a primary defect in the blood-forming organs leading to the production of an inferior quality of red blood corpuscles, which prove more vulnerable to hæmolytic agencies, the jaundice being regarded as a secondary consequence and due to changes in the pigment of the broken-down corpuscles produced in the liver. On this view the chronic enlargement of the spleen which is a feature of the disease is due to the great demands made upon the hæmolytic functions of that organ. The general features of the disease are well described in both papers, and Dr. Weber and Dr. Dorner give useful references to other recorded cases of the condition. There are still some points about which further information is required in order to clear up certain matters upon which there is not as yet general agreement. The morphological characters of the blood appear to be a certain degree of anæmia, with poikilocytosis, anisocytosis, polychromatophilia, and punctate basophilia. The red corpuscles are unusually fragile when tested *in vitro* with salt solutions of various strengths. In both series of cases the serum was not found to possess any hæmolytic properties either on red corpuscles from a normal individual or on those of the patients themselves. Moreover, no hæmagglutinative action was obtainable, although this has been observed in some other cases. Bile pigment was

found in the serum in Dr. Weber and Dr. Dorner's cases but not in Dr. Poynton's. In explanation it may be stated, however, that Dr. Poynton's cases were not examined for this substance when actual jaundice was present. The condition of the urine is also apparently not constant in these cases. Bile pigments are apparently frequently absent, as in Dr. Weber's cases, and hence the name "acholuric" sometimes applied to this variety of jaundice, their place being apparently taken by urobilin and urobilinogen, but this is not invariable, since bile pigments were found in the urine in one at least of Dr. Poynton's cases. In regard to the jaundice occurring in this condition, it is often remittent, usually mild in degree, and, according to Dr. Weber, is never accompanied by icteric pruritus, xanthoma, or clubbing of the fingers. It is probable that more extended investigation of such cases will tend to throw further light on some of the disputed points in the pathology of jaundice, and, as Dr. Poynton has remarked: "It is, indeed, almost impossible not to observe some interesting fact if you have a family of this kind under your care for any length of time."

THE VALUE OF WOMEN INSPECTORS IN THE WORK OF PUBLIC ASSISTANCE.

THE announcement that the President of the Local Government Board has appointed three women inspectors—Mrs. Andrews, Miss Lea, and Miss Todd—to undertake the duty of inspecting maternity wards, nurseries, infirmaries, and the nursing arrangements in Poor-law institutions will come as no surprise to those who have followed the drift of the evidence given before the Royal Commission on Poor-law and the reports of that Commission. It has been for a long time fully recognised that in all the institutions referred to the inspectorial duties involved were not of a kind which could be well undertaken or properly discharged by male inspectors, and there are distinct advantages in the employment of persons who have had practical experience of nursing and of the relation of nurses to one another and to the patients. As regards infirmaries, it is obvious that their rôle in relation to the public is gradually passing from the exclusively Poor-law atmosphere to a condition which approaches that of the general hospitals, and this being so, there is the more need that the level of nursing in these institutions should be raised, and modern methods, so far as practicable, adopted. The better supervision of pauper children, whether in the workhouse, in cottage homes, in schools, or in the cottages of the poor, is a matter upon which the Royal Commission laid great stress, and the appointment of these three women inspectors may, we infer, be taken as a desire on the part of the Board to carry into effect the more practicable of the Commission's recommendations. In this connexion the Local Government Board has recently issued an Order relative to pauper children boarded out within the limits of the union to which they are chargeable. Up to the present time the inspection of children in their homes has been largely an optional, and consequently somewhat perfunctory, matter. By the provisions of the new Order the guardians have either to make arrangements with a boarding-out committee which will have to consist of persons other than members of their own body and of whom one-third must be women to supervise the children boarded out in the union, or else to appoint a committee of their own members. Curiously enough, although children who have been sent to cottage homes and similar institutions may be well looked after, the guardians have not considered it necessary to ascertain how the children whose parents were being subsidised by the rates were being cared for, and it is to be hoped that the women inspectors will possess some supervising powers with regard to these children as well as in relation to those who are "boarded out." It is well, too, to bear in mind that although children under the Poor-law are being cared for in increasing degree in separate institutions, there are still many who are in the workhouses. For example, in 1908, of the 234,792 children in receipt of Poor-law relief, only 62,426 were in institutions, and of this number 16,221 were in workhouses. It was one of the aims of the Royal Commission to reduce the number of these children in workhouses, and this was put in the forefront of the recommendations. "We are strongly of opinion that effective steps should be taken to secure that the maintenance of children in the workhouses be no longer recognised as a legitimate way of dealing with them." The whole time of three women inspectors will be taken up in their immediate routine work, and before long an augmentation in their number may be necessary.

THE SAD CASE OF MR. H. W. COX.

AN appeal which has recently appeared in our daily contemporaries from Sir William Treloar, and to which Mr. F. W. Alexander refers in another column, shows Mr. H. W. Cox, one of the pioneer makers of X ray apparatus in England, to be in a very piteous state and in urgent need of financial relief. As is generally known, his hands were attacked some years ago with X ray dermatitis, but he continued to work with the rays, to which he exposed himself constantly whilst he was testing the apparatus destined for use in the South African war in conjunction with Mr. Hall-Edwards, who has also suffered in the same manner. During the past six years the disease has progressed steadily, and in turn he has been obliged to submit to partial amputation of his left hand, which is now atrophied, to the same operation in his right hand, and in November last to amputation of his right arm. He is now confined to his house in constant pain, and with the disease spreading on his face and in his mouth. To make his position more distressing the rearrangement of his firm's business consequent upon his illness has left him without adequate provision for his wife, who nurses him, and his three sons, the oldest of whom is 16. The £200 which was granted him from the Royal Bounty Fund was a lump gift and not a Civil List Pension as was supposed by some people. Sir William Treloar makes an urgent appeal for subscriptions for his relief, and will gratefully acknowledge any sums that may be sent to the "Cox Fund," 69, Ludgate-hill, London, E.C. The appeal is one that needs no endorsement from us, so rightly is it made, and we feel that Mr. Cox has a strong claim on the administrators of the Civil List.

THE CONTROL OF DISINFECTANTS BY THE BELGIAN GOVERNMENT.

THE *Bulletin de l'Administration du Service de Santé et de l'Hygiène de Belgique* publishes the text of a circular issued by the Royal Ministry of the Interior and of Agriculture of Belgium to the manufacturers of disinfectants concerning the control of their products. This official circular explains that it is necessary to ensure efficacy of the disinfectants employed to prevent the spread of transmissible diseases. In consequence of a report received from the Superior Council of Public Hygiene, the Minister has determined to organise a permanent control of those products which the manufacturers or merchants might desire to submit to this surveillance. Thus it will be seen that the measure is not obligatory, but it is to be presumed that in practice the manufacturers will be driven by self-interest to seek this guarantee, for those manufacturers who carry out the prescribed conditions will likewise be able to put on their goods a label indicating that the disinfectant has been submitted to

the control of the Government. A service already exists in Belgium to verify the fertilizing qualities of artificial manures and the nutritious value of patent and other foods for cattle, and henceforth when buying a disinfectant in Belgium the purchaser must be careful to see that the parcel or bottle bears the inscription "*Désinfectant soumis au contrôle du Gouvernement.*" To be admitted to this control the samples must be forwarded accompanied by an explanation describing the composition and germicidal power of the disinfectant. First an examination will be made to see if the samples correspond with the description attached. Then the Superior Council of Hygiene has been consulted; and if the decision is favourable the manufacturer should hold himself ready to show his books to the persons delegated for that purpose by the Minister. As all advertisements and labels are to be submitted at the same time as the disinfectant itself, there will be a Government guarantee that no statement is made that is not justified by the analyses and experiments. Further, the Government itself will send every year a report concerning its examinations of disinfectants to all medical committees, authorities, and public medical functionaries, and to all public administrations. By his agreement with the Government the manufacturer undertakes to sell disinfectants similar in every respect to the samples submitted for analysis, and to affix labels explaining clearly how they are to be diluted and employed. The products must be numbered and the date of their manufacture given. A purchaser buying more than £16 worth of disinfectant may have an analysis made specially for him, in which case three samples must be taken in the event of dispute. If the disinfectants do not continue to correspond with the descriptions given of them on the labels and the analyses that were made in the first instance, the Government may at once rescind the contract and seize and withdraw from circulation all bottles or packets bearing the label stating that the article had been submitted to analysis by the Government. These measures should largely contribute to clear the market of spurious products.

THE King has given Mr. John Warnock, M.D., B.Sc. Edin., M.R.C.S., Director of the Government Hospital for the Insane at Abbassia, His Majesty's Royal licence and authority to accept and wear the Insignia of the Third Class of the Imperial Ottoman Order of the Osmanieh, conferred upon him by His Highness the Khedive of Egypt, n recognition of valuable services rendered by him.

THE report for 1908–09 of the medical officer of the Local Government Board has just been issued and proves yet again the abundance of work that is discharged by the department in this section of its duties. We shall review the report in detail as usual.

WE regret to announce the sudden death on Jan. 18th of Dr. Stanley Bean Atkinson, well known both as a practitioner and as a medical jurist. We hope to publish a note of his career in a subsequent issue.

Sir William J. Sinclair, M.A., M.D., professor of obstetrics and gynæcology, has been appointed Pro-Vice-Chancellor of the University of Manchester in place of Professor William Stirling, whose term of office has expired.

THE NORTH DEVON INFIRMARY, BARNSTAPLE.—At the quarterly meeting of the governors of the North Devon Infirmary it was decided, on the recommendation of the committee, to establish a dental department in connexion with the infirmary. It was stated that the initial expense of the scheme had been guaranteed.

OBSERVATIONS ON THE CIRCULATORY SYSTEM.

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IV.[1]

Cardio-vascular Resistance.

THE blood as it traverses its conduits meets with resistance. Part, quite a small part, of the energy communicated to the blood by the heart is manifested as forward movement (kinetic energy); the rest appears as tension energy, or blood pressure, which may be defined as the pressure which the blood exerts laterally against the vessel walls. This latter is spent in overcoming the resistance offered to the onward movement of the blood, being thereby converted into heat. Thus it is that the fall of the blood pressure in different parts of the vascular system is an accurate measure of the resistance overcome.

In order to understand the nature of the resistance offered to the circulating blood it will be well first to consider briefly some of the laws governing the flow of liquids through tubes. Setting aside the resistance due to the obliteration of a vessel from external pressure, practically the whole of the resistance which the circulating blood normally encounters is due to the friction of the blood particles (plasma molecules and, to a less extent, blood corpuscles) against one another. The blood particles are separated from the vessel wall by a layer of plasma, and the outer film of this being stationary there is no actual friction between the blood and the cardio-vascular walls.[2]

Now, the degree of friction produced by the rubbing together of two bodies depends upon: 1. The facility with which the two bodies can be made to move on one another: a sleigh generates more friction on rough ice than on smooth ice. 2. The force with which the two bodies are pressed against one another: a heavy sleigh generates more friction than a light one. 3. The extent to which the one body travels over the other in a given time: a rapidly moving sleigh generates more friction in a given time than one moving slowly. Applying these principles to the circulation we find that blood friction varies with: (1) viscosity; (2) blood pressure; and (3) the extent to which adjacent particles of blood move against one another in a given time.

1. *Viscosity.*—Friction increases with viscosity. It needs four and a half times as much force to drive blood as it does to drive the same quantity of water through a tube. As showing how viscosity influences resistance, it may be mentioned that when blood is driven through fine tubes the resistance increases as the contained oxygen is diminished, and also that it may be modified by the addition of various drugs to the blood. These effects can only be produced by a modification of blood viscosity. Similar modifications in blood viscosity and resistance have been obtained by injecting drugs into the circulation, after removing, as far as possible, the influence of the vaso-motor system by nerve division.

There has been much discussion as to how far modifications in blood viscosity influence resistance in the living subject. Though there can be no doubt that resistance varies directly with the degree of viscosity (the calibre of the blood-vessels remaining the same), we must not forget that modifications in viscosity may be met by compensatory modifications in vascular bore. We might expect, e.g., an increase of resistance brought about by an increase of viscosity, to be met by a corresponding fall in resistance through arteriolar dilatation.

I much doubt the influence of viscosity in appreciably modifying resistance in the living subject. I believe we may accept it as a fundamental principle that modifications of resistance are essentially determined by modifications in the degree of arteriolar contraction. Certain it is that the latter are capable of neutralising the influence of viscosity on resistance: were the blood to become as little viscous as

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[1] Nos. I., II., and III. were published in THE LANCET of Jan. 1st (p. 48), 8th (p. 121), and 15th (p. 193) respectively.

[2] Blood corpuscles may occasionally adhere to the walls of the capillaries, but the resistance thus caused is so small as to be practically negligible.

water, blood pressure might yet be raised to dangerous heights by a generalised arteriolar spasm; and, on the other hand, it is very doubtful whether the blood ever acquires such a degree of viscosity as to prevent an extensive opening of the arteriolar floodgates from allowing it to rush with fatal facility into the veins. This consideration makes it at least doubtful whether there is any constant relation between blood viscosity and blood pressure.

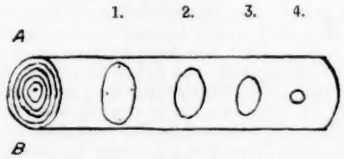
2. *Blood pressure.*—The higher the blood pressure the more are the blood particles pressed against one another and the greater (*ceteris paribus*) the friction between them. Hence it is that the increased resistance resulting from arteriolar contraction is not solely due to the influence of the narrowed arteriolar lumen on resistance, but partly also to the resulting increment of blood pressure. This factor, which, so far as I know, has been neglected by physiologists, is probably inconsiderable.

3. *The extent to which the blood particles move over one another in a given time.*—This depends upon three factors: (*a*) size of lumen; (*b*) rate of flow; and (*c*) the occurrence of eddies at the cardiac and vascular orifices.

Before dealing with these factors let us consider the case of blood flowing through the unbranched portion of an artery. The blood particles in such a cylindrical tube travel in lines ("stream lines" they are termed in hydro-dynamics) which run parallel to one another; and this happens also in moderately curved or tortuous vessels.[3] The stream lines do not, however, all travel at the same rate. The nearer they are to the axis of the vessel the more rapidly do they flow. We may, in fact, regard the column of blood as consisting of a number of tubes ("stream tubes") placed one within the other, the innermost cylinder enclosing no more than a single file of blood corpuscles with intervening plasma. The rate of flow is greatest in the central file, each successive tube outside this moving with diminishing velocity until finally the outermost layer of stationary plasma is reached.

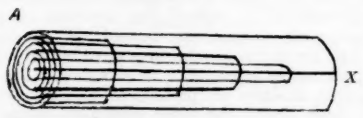
Hence if we imagine a disc of circulating blood occupying the transverse section of a blood-vessel at A B (see Fig. 5)

FIG. 5.



its particles will soon lose their relative position to one another, the successive rings of blood from without inwards after a time bearing the relative positions represented by 1, 2, 3, 4. Or if, instead of a single disc, we imagine a column of blood of which the disc at A B (see Fig. 6) is the

FIG. 6.



front part, then by the time the central file has reached X each successive cylinder will have lagged behind the one it envelopes, so as to produce the appearance of an extended telescope. Inasmuch as the outer film of blood is stationary, it will thus be seen that (as already stated) the resistance which the moving blood encounters in the vessel is due to the friction of its particles against one another.

We are now in a position to consider the influence of size of lumen and rate of flow on resistance.

(*a*) *Size of lumen.*—The influence of this factor on resistance may be expressed thus: the resistance to the flow of a fluid along a small tube, such as a blood-vessel, is inversely as the fourth power of its diameter—i.e., halving the diameter increases the resistance sixteen-fold. In order to understand why resistance increases with diminution of bore two facts have to be borne in mind: the fact that the resistance is due to friction of the stream tubes gliding within one another, and the fact that the rate at which each moves within the other becomes less and less from without inwards.[4] It follows from this that friction diminishes from without inwards, and such being the case it is manifest that the total mean friction must diminish with every *increment* in the bore of the vessel.

It is on account of the influence of vascular bore on resistance that vaso-motor dilatation diminishes resistance and vaso-constriction increases it. It should be mentioned in this connexion that it is only when the lumen of a blood-vessel is quite small that it opposes marked resistance. Even so comparatively narrow an artery as the radial offers but little resistance: this is shown by the smallness of the fall of blood pressure which takes place within it. Hence it is that vascular resistance is essentially controlled by the arterioles.

It is chiefly on account of the influence of bore on resistance that a yielding vessel offers less resistance to the blood than a rigid one: a yielding vessel tends to give before the blood pressure, and thus to suffer an increase in its lumen. It has to be remembered in this connexion that the bore of the arteries is much greater when distended by the blood than when undistended.

The capillaries, consisting as they do of simple endothelial plates, are capable of considerable dilatation under the pressure of the blood within them, and this dilatation tends to keep down the resistance which they offer to the blood current.

(*b*) *Rate of flow.*—Blood friction increases with the rate of flow. This is to be explained by the fact that the extent to which successive tube streams glide within one another increases with the rate of flow. Manifestly, the more rapid the axial stream the greater is the difference between its rate and that of the outermost tube stream—i.e., the most slowly moving one—and therefore the greater the difference in the rate of adjacent tube streams.

A word now as to the extent to which the two factors in resistance, size of lumen and rate of flow, operate in different parts of the vascular system. If a tube divides and subdivides so that the total sectional area, or "bed," remains the same throughout (as would seem to be the case with the arterial system until the region of the arterioles is reached), the rate of flow, and consequently the resistance from this cause, will remain the same throughout, while the resistance, depending on size of bore, will increase with every subdivision, owing to the progressive narrowing of the vascular bore. If, however, with each division the bed steadily increases, while the bore of the tubes continues to diminish (as was once thought to be the case with the arterial system) the rate of flow will steadily diminish, and thus the increase of resistance due to the increasing narrowing of the tubes will be more or less counteracted by the diminution of resistance caused by the progressive slackening of the flow. Indeed, I believe it to be possible to construct a system of continually narrowing tubes in which the former is more than compensated by the latter, so that with the progressively widening bed resistance becomes progressively less. If, finally, the bore of the tubes remains the same with every subdivision, the great increase in the width of the bed thus produced will lead to a marked slackening of the flow and a corresponding diminution of resistance. This is what actually occurs in the region of the capillaries, which differ from most other blood-vessels in that their bore remains the same with each division and subdivision.

Comparing now the influence of smallness of bore and quickness of flow on resistance, it is to be observed that neither by itself is capable of opposing great resistance. Thus, the narrow capillaries offer but little resistance, because the blood flows slowly through them, and, on the other hand, the rapid current of blood in the large vessels gives rise to little resistance[5] on account of the largeness of

[3] It should be mentioned that these statements only apply to viscous fluids, like the blood, travelling with moderate rapidity through narrow tubes. In the case of less viscous fluids such as water travelling at great speed through comparatively large tubes, the stream towards the centre of the tube is broken up into eddies, becoming turbulent.

[4] The truth of this principle may be studied by observing the flow of water in open channels—e.g., rivers. The more the centre of the stream is approached, the more do the adjacent stream lines tend to flow at the same rate.

[5] This is shown by the fact long ago pointed out by H. Jacobson that "the pressure in the principal arterial trunks remains very nearly identical with that of the bulbus aortæ." Even so narrow an artery as the radial offers comparatively little resistance to the blood flow.

their lumen. It is when the two factors—smallness of lumen and high rate of flow—coöperate, as in the case of a hypertonic arteriole, that resistance reaches its maximum. Nothing better shows the small effect of high rate of flow alone in opposing resistance than the comparatively small resistance (equivalent to about 20 mm. Hg) offered by the pulmonary circuit, in spite of the fact that the mean rate of flow through this circuit is considerably greater than that through the systemic circuit.

(*c*) *Eddies.*—Hitherto we have considered the flow of blood in a portion of vessel devoid of branches. In such a case the particles of blood flow, as we have seen, in parallel stream tubes. This is true whether the vessel is straight or moderately curved. In the former case the stream tubes are straight; in the latter (as in a moderately tortuous vessel) they are curved, blood friction in each case being caused simply and solely by a sliding of the parallel stream tubes one within the other.

The particles constituting the moving column of blood do not, however, always flow in this regular manner. In certain cases, as when a sharp twist of a vessel occurs (as in the arch of the aorta), or when the blood stream is diverted from the main trunk of an artery into a branch, or, again, when two branches of a vein meet in a common trunk, the blood particles no longer advance in parallel lines, but tend to cross one another at varying angles, thereby forming eddies, and this leads to an augmentation of resistance. We shall see, however, that in the engineering of the vascular system special precautions have been taken to reduce this source of resistance to a minimum.

Influence of length of vessel on resistance.—Though resistance increases directly with length of vessel, it is important to note that great length of vessel does not necessarily imply great resistance. Many considerations prove this. Consider how small is the fall of blood pressure in the larger systemic arteries, and in the entire pulmonary circuit; how easily the blood flows into the systemic veins when the systemic arterioles relax; and again, how small is the amount of pressure needful, even in the larger mammalia, to drive the blood from the systemic capillaries through the entire venous system into the right heart. The comparative independence of resistance on mere length of tubing is further shown by the fact that although the systemic circuit is made up of a number of individual circuits of varying lengths (compare the length of the coronary circuit, e.g., with that of the femoral) they all offer much the same resistance. It is only when the bore of the vessel is small, while at the same time the contained blood is flowing rapidly, as in the case of the spermatic arteries, that length of vessel has marked influence on resistance.[6]

It should be observed that in so far as tortuosity increases resistance it is by an increase in length of vessel and not by virtue of the tortuosity as such, inasmuch as the tube streams in a tortuous vessel (unless, perhaps, the tortuosity is extreme) remain parallel, eddies being thus absent. It is, indeed, easy to show that the flow of fluid through a flexible tube is practically unaffected by rendering it tortuous. It has to be remembered, however, that in the case of the blood-vessels tortuosity implies increase of length and may in this way lead to increase of resistance, and it is conceivable that the tortuosity of certain vessels, such as the coronary arteries and the spermatic arteries (in certain animals—e.g., the ram and the bull), may be for the purpose of offering increased resistance, though I am doubtful of this. In other arteries, such as the facial and vertebral, the object of tortuosity is apparently to allow the vessels to adapt themselves to the movements of surrounding parts.

In pathologically tortuous arteries there is always loss of elasticity, and there may be irregularities of the interior from degenerative changes, both of which conditions make for increased resistance. On the other hand, pathological tortuosity of blood-vessels is always accompanied by a dilatation of them, and this tends to diminish resistance.

By far the shortest vessels in the body are the capillaries, which are probably not more than 1-2000th part the length of the entire systemic segment, a fact which helps to explain why these vessels offer so little resistance to the blood flow.

(To be continued.)

[6] The question here arises whether the great length of the spermatic arteries may serve a physiological purpose by sheltering the capillaries of the testes from the great pressure of the aortic blood, and whether we have here a clue to the extra-abdominal position of these organs in the mammalia. Among other arguments against this view is the fact that the ovaries are intra-abdominal.

ANNUAL REPORT FOR 1908 OF THE MEDICAL OFFICER OF HEALTH OF THE ADMINISTRATIVE COUNTY OF LONDON.

II.[1]

CONTINUING our review of Part I. of this report we note the reproduction from previous reports of the standard tables of mortality as well as of the usual diagrams showing the incidence of the common infectious maladies and of other prevalent diseases in the several metropolitan areas.

It will be known to most of our readers that useful summaries of these facts are contributed by the county medical officer of health to the weekly and quarterly returns of the Registrar-General, but in the present report they are presented in greater detail, the facts being grouped according to age and sex, and in some cases corrected for errors in diagnosis.

Principal Epidemic Diseases.

Among diseases of the epidemic class the notification of which is not at present compulsory measles has recently attracted much attention from the district health officers, who derive their information as to occurrence of cases mainly from the teachers in elementary schools. Most of the annual reports show the number of cases thus coming to official knowledge, but the figures are obviously incomplete and do not correspond to the number of deaths from measles registered in the respective districts. As a result of recent changes in the birth-rate, the proportion of the population now living at the earlier ages has diminished to such an extent that Sir Shirley Murphy has found it necessary to calculate the mortality from this and other children's diseases in terms of the numbers living at ages under five years. From the results of this process for 1908 it appears that in the sanitary area of Hampstead the deaths from measles did not exceed 30 in each 100,000 living at this age, whereas the proportion rose to 558 in the same number living in Bethnal Green, 608 in Bermondsey, and 621 in Stepney. Social condition is found to determine very largely the mortality from this disease, the death-rate rising steadily with the increase of overcrowding, as measured by the proportion of the population living more than two in a room in tenements of less than five rooms. For example, in those sanitary areas where the proportion of overcrowding did not exceed 7·5 per cent. the measles death-rate averaged 212 per 100,000 living at ages under five years, whilst in those areas where 27·5 per cent. of overcrowding existed the rate amounted to 457 in the same number living. Among preventive measures, account is given of Dr. Kerr's method for the limitation of measles infection with the least disturbance of education. When measles appears in a school the practice adopted is to make closure of class-rooms depend on the number of children who are not known to have already had measles, and who are presumably susceptible to infection. The exclusion of susceptible children in preference to class-room closure has often been found the most profitable course. It has further been observed that in order to be useful closure of schoolrooms must take place at the first manifestation of disease and before the whole class has become infected from the earliest cases.

Very similar to the behaviour of measles was that of whooping-cough. In the year 1908 it was less destructive than in any previous year. The deaths in London at ages under five years were at the rate of 184 per 100,000 living, as compared with 421 in the decennium last completed. When the London sanitary districts are grouped according to the proportions of the population living more than two in a room the mortality from whooping-cough varies almost exactly as does that of measles—i.e., it increases *pari passu* with the increase of overcrowding. Thus, according to the experience of the last eight years, whooping-cough was fatal to children under five years old at the rate of 229 per 100,000 living in the least crowded metropolitan areas, whilst it amounted to 331 per 100,000 in the most crowded areas.

[1] A previous notice of this report appeared in THE LANCET of Jan. 15th, p. 196.

Compulsory Notification of Infectious Disease.

The administrative advantages of compulsory notification are growing steadily apparent each successive year, and nowhere more so than in the cases of scarlet fever and diphtheria, which diseases in their relation to elementary education tax quite exceptionally both the skill and the patience of medical officers of health. Under the Notification Act statistics of scarlet fever and of diphtheria prevalence in London are now available for every year since 1890. And in the present report diagrams are given showing the ratio of cases to population, as well as the percentage fatality among the cases occurring in each month of the last 17 years. The tables showing the distribution of scarlet fever attacks at various ages are exceedingly valuable, for the facts are now sufficiently numerous to eliminate error due to paucity of data. In both sexes the year of life in which the greatest proportion of scarlet fever attacks occur is the fourth, and this is true for each of the periods from 1893–95 to 1906–08 inclusive. In this connexion, however, Sir Shirley Murphy has drawn attention to the fact that in consequence of the declining birth-rate the age constitution of the child population has considerably changed, and it is certain that this change will affect the figures in these tables when the data of the next census are available. With the object of indicating recent changes in the age incidence of scarlet fever, tables are appended which show that the general decline observed at most other ages has not been experienced at ages 3, 4, and 5 years among males, or at ages 4, 5, and 20 years among females. According to the experience of 1908 the first and second years of life are the most fatal to infants suffering from scarlet fever. The usual table is inserted showing the relation of holiday influence to scarlet fever prevalence in London during 1908. From this it appears that during the four weeks of summer holiday influence there was a decrease equal to 11 per cent. in the notified attacks of scarlet fever amongst children of school age—i.e., from 3 to 13 years—whilst in the four weeks following the weeks of holiday influence there was an increase of 45 per cent. in the notified attacks. Interesting excerpts are quoted from the reports of district medical officers of health, giving particulars of the spread of scarlet fever by means of mild and unrecognised cases, and with respect to these Sir Shirley Murphy remarks that "the ability to limit the spread of this disease depends on the opportunity for prompt detection of first cases. The absence of a child from school is often the first indication that the child may be ill. Any arrangements which can be made to secure earlier knowledge of the cause of this absence promise to lessen the opportunity for infection of other members of the family if the school child is suffering from an infective malady. In the same way such improved arrangements would lessen the probability that a child suffering from a mild attack of scarlet fever would return to school after a few days' absence and before it had ceased to be infectious." It is satisfactory to learn that the proportion of notified cases of scarlet fever admitted to the hospitals of the Metropolitan Asylums Board continues to be very large, averaging between 85 and 90 per cent. in the last five years.

Diphtheria prevalence in the metropolis has not varied greatly in the course of the last five years, the cases notified having ranged from 1·4 to 1·8 in each 1000 of the population, and the case mortality from 8·4 to 10 per cent. of the attacks. It is desirable, however, to point out that both these rates may be affected by the degree in which bacteriological methods are employed for diagnostic purposes, for it is certain that their systematic use leads to the detection of clinically mild cases of diphtheria which otherwise would probably have escaped notice. Sir Shirley Murphy reports that the use of bacteriological methods for administrative purposes continues to increase in London. In the year under notice more than 8000 bacteriological examinations were made, one-fifth part of which gave positive results. Particulars are given of the procedure adopted in various districts for limiting the spread of diphtheria. For example, in Bermondsey whenever a case is reported other members of the family are invited to submit to bacteriological examination, which is repeated after the patient's return home from hospital. Of 315 persons thus examined, 13 were found harbouring diphtheria bacilli, and of these 4 subsequently developed that disease. In Wandsworth, on the occurrence of diphtheria in the schools, the throats of all contacts are swabbed. The houses of absentees are visited and all children with sore throats are treated similarly. No child is allowed to return to school until found to be free from diphtheria bacilli. Again, in Camberwell all children who have been treated at home are examined bacteriologically before return to school. In the quinquennial period 1903–07 diphtheria was most destructive in the sanitary area of Poplar, and least so in the City of Westminster and in Hampstead. In London generally the incidence of attack was greatest upon both males and females of the age of three years, whilst the incidence of death was greatest among males of one year and among females of three years old. In both sexes the fatality was greatest among infants under the age of one year. The usual table is repeated showing the influence of the summer holidays on diphtheria prevalence among children of school age. From this we note that in the four weeks of holiday influence there was a decrease of 1 per cent. in the notified cases of diphtheria at ages 3–13, whilst in the four weeks following the weeks of holiday influence the notified cases showed an increase of 21 per cent. From an instructive table showing the fluctuations of diphtheria prevalence at the various ages, it appears that when the corrected rates of 1906–08 are compared with those of 1893–95, the ages under five have not shared equally with the older ages in the decline of diphtheria incidence recorded in the table.

Enteric fever prevalence in London has shown little change during the last four years, the notified cases in each year having been in the proportion of 3 per 10,000 of the population at all ages—a rate which compares favourably with that of the decennium 1891–1900, which was 8 in the same number living. Among metropolitan districts in the period 1898–1907 enteric fever was most prevalent in Poplar and in Shoreditch, where the reported cases were equal to a rate of 9 per 10,000 living; it was least prevalent in Lewisham, where the rate did not exceed 3 in the same population. During the year 1908 the case-rate, the death-rate, and the percentage fatality among the notified cases of enteric fever were higher among males than among females. The greatest incidence of attack was upon males at ages from 15 to 20, and upon females at ages from 10 to 15. The greatest incidence of death was upon males from 35 to 45, and upon females from 25 to 45. The proportional fatality among the notified cases was highest among males of 55 years and upwards, and among females between the ages of 45 and 55. The behaviour of enteric fever in recent years has been peculiar in this respect, that several local prevalences of the disease have occurred in poor populations, and lasting often for a considerable period. In the year under notice two such prevalences are reported, one in Bethnal Green, the other in Shoreditch. By the courtesy of Dr. G. P. Bate, Dr. Hamer was allowed the opportunity of investigating the former outbreak, whilst Dr. L. T. F. Bryett supplied him with the means of investigating the latter. It would appear that both Dr. Bate and Dr. Bryett consider the prevalences in these respective districts to be due to infection from person to person, whilst Dr. Hamer, on the contrary, sees reason for thinking them to have been caused by an infected food-supply. In both districts the locality implicated was occupied by very poor persons living under squalid conditions. In Shoreditch it was found that in numerous instances two or three, or even more, cases had occurred in a single house. The epidemic in Bethnal Green occurred in the months of September and October, whilst that in Shoreditch extended over a much longer period.

Tuberculous Phthisis in London.

In his remarks on the behaviour of mortality from pulmonary tuberculosis or tuberculous phthisis in the metropolis Sir Shirley Murphy is able to report a further continuance of the decline which has been observed in recent years, the death-rate from that disease having been equal to 1·32 per 1000 living at all ages, which is the lowest metropolitan rate on record, but is higher than the rate in England and Wales by 0·21 per 1000. If the London rates for the periods 1901–04 and 1905–08 be compared we find that the mortality has declined by 13·2 per cent. By studying the distribution of fatal phthisis in its relation to age and sex Sir Shirley Murphy arrives at the conclusion that with the decline of phthisis mortality in London alteration is taking place in the age incidence of death. Comparing the mortality in 1901–07 with that of the five decennial periods immediately preceding he tells us that, broadly speaking, the decline in phthisis mortality among

persons above the age of 15 years has been most marked among females, while among persons below that age the decline has been more nearly the same in both sexes. This behaviour of the figures he regards as consistent with the hypothesis that improvement in the conditions of home life has been a material factor in the decline, inasmuch as home conditions would probably affect males above the age of 15 in a less degree than females, while both sexes under that age would probably be more evenly affected. A well-known table of former reports is repeated here, showing the close relation which exists between social conditions as measured by "overcrowding" and excessive phthisis mortality. The table relates to the period 1901–08, and from it we learn that whereas in the least overcrowded metropolitan districts the death-rate from phthisis is equal to 1·062 per 1000, in the most overcrowded districts it is nearly double that amount, or 2·080 per 1000. Sir Shirley Murphy gives an account of the various administrative measures either existing or in contemplation for the control of phthisis prevalence in the metropolis, and to them we purpose to refer on a future occasion.

(To be continued.)

MEDICINE IN SOCIETY IN THE FOURTH CENTURY A.D.

MEDICINE and kindred studies have always possessed a charm for non-medical persons, and this for various reasons. There is one class the members of which are always glad to have the opportunity of meeting "dear Doctor ——," in the hope that they may obtain some information of value without the necessity of paying a fee. Others discuss medical matters which they do not understand, but which they fancy they would like to, probably on the principle of "omne ignotum pro magnifico"; and others, again, put forward medical or physiological problems from a genuine wish to obtain knowledge about their bodies. All these classes are much in evidence at the present day, and every medical man who mixes much in general society must be aware how frequently medical matters are discussed at social gatherings. Appendicitis has had its day, and the fashionable lady of the hour instead of asking her neighbour as to the health of her children, languidly inquires, "And how is your opsonic index?" *Mutatis mutandis*, however, all this is nothing new, for Plutarch in his "Symposiacs" has collected the substance of various conversations, "which both at Rome and in Greece we have disputed on amidst our cups and feastings." Among the subjects discussed were various questions dealing with medicine and natural philosophy, and a great part of these Macrobius, circa A.D. 380, "lifted" for his Saturnalia. Practically nothing is known of Macrobius apart from his works. But among his friends were some of the great men of the day, and we may mention Praetextatus, Symmachus, Flavian, Caecina Albinus, and Servius, the well-known commentator on Virgil. Macrobius introduced all these people into his "Saturnalia," a treatise which he wrote for the use of his son, and which may be called a fourth-century "Complete Gentleman." It dealt mainly with Virgil as being "omnium disciplinarum peritus," and the work is written as a symposium. The persons of the dialogues are represented as meeting during the Saturnalia, which lasted three days, at the houses of Praetextatus, Flavian, and Symmachus. At the meetings they discussed various subjects, and among others sundry medical and scientific subjects which are treated in Book VII. The book opens with a discussion on the art of conversation. It is extremely bad taste, says one of the characters in the book, Eustathius, to ask a man a question in company unless he knows his subject well. For in that case he will either have to confess his ignorance, which will put him to shame, or else he must answer rashly and at haphazard when again his ignorance will sooner or later be apparent (VII. 2, 5). Prætextatus remarked, "Come, now, all you men, let us talk of something fitting conviviality, not so much about eating as about the nature of our bodies or other matters, especially as here is our friend Disarius, who is specially fitted from his learning and his art for the discussion of matters such as these, and let each one of us put a question in turn" (VII. 4, 1).

All the guests decided that Praetextatus should ask the first question, and accordingly he said, "I wish to know whether a simple or a varied diet (simplex an multiplex cibus) is the more easily digested and which is the better for health?" Disarius, who is described as the leading physician of the day at Rome (Qui tunc Romae praestare videbatur ceteris medendi artem professis, I. 7, 1), promptly replied: "If any unskilled person had asked me this question, I should have told him (since common people always learn better from example than from reason) to look at cattle, whose diet is simple and uniform, and which are far more healthy than human beings. But those cattle which are picked out to be fatted and are fed on spiced cake (offa) often fall ill. Then, too, I should ask him: 'What would you think of a physician who showed so gross neglect in the treatment of a fever patient as to order him a mixed diet and not a simple one?' Again, a variety of food is to be avoided just as much as mixing your drinks. Everyone knows that a man who drinks different kinds of wine suddenly gets drunk, and that, too, without having taken very much." Disarius went on to say that Praetextatus being a learned man did not want example but reason, and he then launched out into a long discourse upon the physiology of digestion which we may summarise as follows:—"Indigestion arises either from the quality of the juice into which the food is converted, so that it is unfitting for the 'humor' which occupies (obtinuit) the body, or from the variety of the food itself, so that the natural forces are not powerful enough to break down all the substances with which they have to deal. If a man takes one food alone he knows at once whether it suits him or no; if it does not, he knows that that particular food is to be avoided. A mixed diet, on the other hand, produces a variety of juices and the 'humours' which are produced thereby do not agree with one another. Moreover, the blood into which these are translated by the agency of the liver is neither properly fluid nor pure, and passes turbulently into the veins. Hence arises a very fountain of diseases from the warring of the discordant humours. Again, in a mixed diet the various substances are not all digested at the same rate and so the sequence of the digestive process is upset. All food really undergoes four digestions, and, besides, there are four forms of energy (quattuor sunt in nobis virtutes) which deal with the food. The first is that by which the food is attracted into the stomach, the second that by which it is retained, the third is that by which it is transmuted from one thing into another, and the fourth is that by which the transmuted food is separated into that which is used in the body and that which is cast out. The four digestions are the following: the first in the stomach; the second in the liver; the third in the veins and arteries, where the watery part is separated and goes into the bladder and the pure, fattening blood is distributed all over the body; while the fourth is that process by which every member of the body takes up what is necessary for it. All this elaborate arrangement is likely to be upset by a mixed diet." This argument having met with the approval of the company, Evangelus, who is the rude young man of the book, exhorts Eustathius to argue on the other side, which he proceeds to do at great length. Disarius replies that Eustathius had treated the subject as a matter of dialectic, but that he himself had argued as a physician. "But," he adds, "try both and experience will teach you which is the better for health."

Considerations of space forbid us to give in detail all the problems which are discussed, but we may mention some of them. Flavianus asks, Why, according to Aristotle, do women very rarely get drunk but old men do so easily? Disarius is of opinion that the system of a woman being very moist and her body being full of pores the wine evaporates very quickly, whereas an old man has a dry, hard skin, through which the wine cannot easily pass, whence it ascends to the very seat of the mind. Evangelus asks why a man becomes giddy if he spins round. Disarius answers that the body can move in seven different ways—forwards, backwards, to the left, to the right, upwards, downwards, and with a rotational movement. Of all these motions the last alone is found in divine bodies such as the stars, and ordinary animals are not accustomed to it. Hence, if they are spun round, the "spiramentum," by which the brain and indeed all the senses of the body are governed, is overwhelmed by the humours, and dizziness, tottering, and loss of sight supervene. But by practice the spiramentum can

get accustomed to the rotation and will continue to act as governor.

Other questions are propounded, such as, What is the cause of blushing? Why cannot clothes be washed in salt water? Which came first, the egg or the hen? Evangelus asked this old, old question, and went on to say that there was something else that he really wanted to know. There had been a boar hunt on his estate at Tibur; some of the game had been brought into Rome by day and some by night under a bright moon. The former kept quite sweet, the latter putrefied. When this was noticed, as there were some more to come in the next night, they stuck a bronze knife into the bodies and they did not putrefy. Why was this? Disarius replies that putrefaction requires both heat and moisture. Excess of heat stays it by drying up the moisture. The sun is hot, therefore the carcasses exposed to it did not decay. The moon has no obvious heat, therefore the carcasses brought in by moonlight decayed. Eustathius is not quite satisfied with this answer. He thinks that there is some particular property in moonlight which is harmful. As to the bronze knife, he thinks that part of the story is probably true. For bronze possesses a powerful quality which physicians call styptic, and scales of bronze are among their remedies for putrefaction. Aristotle, too, says that wounds made by a bronze knife heal up much better than those made by an iron weapon, because bronze possesses a remedial and drying quality which it transmits to the wound which it inflicts. Moreover, those who work in copper mines have very good sight, and if any of them should have lost their eyelashes they begin to grow again. For the emanations which proceed from the copper draw out and dry up the humours which caused the disease. It is interesting in connexion with this alleged "influence" of copper ore to remember that workers in copper works have been reported as being singularly little liable to be attacked by cholera.[1]

There is a forecast of modern anatomy in Book VII., cap. ix., in a discussion upon sensation, where Disarius gives an account of what may be called the cranial nerves. There are seven pairs of them arising from the ventricles of the brain, and according to Disarius their destination is as follows. The first goes to the eyes, the second to the ears, the third to the nose, the fourth is the gustatory, the fifth "energises the whole body," the sixth goes to the stomach, and the seventh supplies the spinal marrow with sensation.

Some of the books of the Saturnalia are lost, notably those on astrology and philosophy, but if the son read and remembered his father's encyclopædia it is evident that he would have been well educated, and as regards natural philosophy not so incorrectly as might be supposed.

Looking Back.

FROM

THE LANCET, *SATURDAY*, Jan. 21st, 1832.

ANALYTIC NOTICE.

Experiments on the Disinfecting Powers of Increased Temperatures. By WILLIAM HENRY, M.D., F.R.S.

IN the *Philosophical Magazine* and *Annals*, for November 1831, Dr. Henry, of Manchester, described a series of experiments, which he performed with a view to investigate the effects of increased temperatures on various infectious principles. A continuation of these researches appears in the same Journal for the present month, and we believe we cannot devote a moderate portion of our pages to a more interesting subject, especially when considered in juxtaposition with the important Report on the reputed disinfecting agency of chlorine, which we have condensed in the foregoing article.

From the experiments contained in his first paper, to which our limits do not permit us to allude in greater detail, Dr. Henry conceives that he has established—

First, That raw cotton, and various kinds of fleecy goods, manufactured for clothing from that or other materials, sustain no injury whatsoever, either of colour or texture, by exposure for several hours to a dry temperature of nearly 212° Fahrenheit.

Secondly, That the infectious matter of cow-pock is rendered inert by a temperature not below 145° of the same scale.

From the second of these results Dr. Henry concludes, that the more active contagions are probably destructible at temperatures not exceeding 212°. The appearance of the cholera at Sunderland induced him to extend the investigation, in the hope, as he expresses himself, that, should cholera be proved to be a contagious malady, his results might tend to put a check to its devastations.

. . . . . .

We are bound in justice to add, that Dr. Henry is by no means the first author who has speculated on the application of heat as a disinfecting agent. Sir Humphry Davy, for example, distinctly alluded to it in his evidence before the Quarantine Committee in 1822. Again; many of the processes in our arts and manufactures might have afforded Dr. Henry ample evidence of the high degree of temperature which may be applied to various fine organic tissues with perfect safety to their texture, and without detriment to their subsequent durability.

The information obtained on this subject by the Central Board of Health, has induced that body to recommend that the clothes worn by, and the bedding used by, patients supposed to have been labouring under the influence of malignant cholera, shall, in all cases, be subjected to the influence of heat in a stove or oven, or immersed in boiling water.

[1] THE LANCET, vol. ii., 1869, p. 655; vol. ii., 1873, p. 741; vol. i., 1877, p. 441.

THE REGISTRAR-GENERAL'S ANNUAL REPORT FOR 1908.

II.[1]

Tuberculosis.

CONTINUING our review of the Registrar-General's report, we observe that, as has been the case with its recent predecessors, a considerable part of the present volume is allotted to the subject of mortality from tuberculosis. We gladly recognise the familiar diagrams of former reports showing the fluctuations of tuberculous mortality in the course of the last half century, the mortality from the pulmonary form being indicated by darker and that from other forms of tuberculosis by lighter shading. As the whole of the death-rates are based on the age and sex conditions of the population in 1901 they may be accepted as fairly reliable.

That the public conscience should at length have been awakened to the necessity of effective action for the arrest, if not the extirpation, of this national scourge is what might have been expected from the fuller knowledge we now possess of the nature and development of this disease. Although in England and Wales generally the loss of life stated to be caused by tuberculosis is now less than half of what it was some 50 years ago, it still accounts for one in ten of the total deaths registered. And in this regard, what appears to us of grave importance is the fact that pulmonary tuberculosis, which causes seven-tenths of tuberculous mortality in the aggregate, selects its victims of both sexes whilst in the prime of life, and therefore at precisely that stage when their economic value as mothers or fathers or as bread-winners is at the highest point. The preventability of this, or tuberculous phthisis, is now generally recognised both at home and abroad, and as a consequence large sums have already been expended in this country on sanitary measures which, although perhaps designed for other purposes, have undoubtedly contributed to the limitation of this disease. English mortality from pulmonary tuberculosis in the year under notice was the lowest on record, and corresponded to a rate of 1115 per 1,000,000 living at all ages and of both sexes. From the usual table it appears that in the five years ended 1907 the urban phthisis-rate at all ages was higher than the rural rate by 25 per cent. among males, but was lower by 1 per cent. among females. It is, however, important to note, with respect to the mortality at different

[1] Previous notices of this report appeared in THE LANCET of Jan. 1st and 8th, 1910.

ages, that the rate is higher in the rural areas than in the urban, at ages from 15 to 35 among males, and at ages from 10 to 35 among females. Between the decennial period 1851–60 and the eight-year period last ended there has been a fall of 70 per cent. in English mortality from phthisis among persons of both sexes below the age of 25 years. Compared with the average, in the five-year period last ended there has been a general fall in the death-rate of both sexes at all ages below 55 years; but among men at ages above 55 and among women at ages above 65 years there has been a slight rise. In recent years the greatest proportional fall in mortality appears to have occurred among children below the age of 5 years, but the greatest saving of life has been experienced at ages from 35 to 45 years.

The duty of providing for the hospital treatment of persons suffering from phthisis is now recognised by the more public-spirited of our sanitary authorities. It therefore becomes imperative that accurate official knowledge should be generally accessible respecting the areas exceptionally infested with this malady. A table will be found in this report which seems to meet the requirements. The several counties of England and Wales suffering excessively in this respect are there tabulated in order, and from this it will be seen that of the 15 counties known to possess rates of mortality above the average for England and Wales as a whole, not fewer than seven are Welsh. In these areas the rates vary remarkably. For whilst in the county of Suffolk the average phthisis-rate in the last five years has not exceeded 1177 per 1,000,000 living, it was nearly double that amount, or 2270 per 1,000,000 in the county of Cardigan.

Pulmonary tuberculosis still causes excessive mortality in Austria-Hungary, Servia, and Ireland, but in Scotland, Prussia, the Netherlands, and Belgium a marked diminution in mortality has recently been observed. The English rate —viz., 1·22 per 1000—was exceeded in seven continental countries, whilst in two only was the rate below that of England.

Among other forms of tuberculous disease we observe that both meningeal and peritoneal tuberculosis are much less fatal now than they formerly were. Not less than 67 per cent. of the death-rate from these diseases respectively occur within the first five years of life. From a table we learn that since the year 1868 there has been a fairly steady fall in the death-rate from tuberculous meningitis, and since the year 1878 a similar fall in that from tuberculous peritonitis. From the first of these maladies the mortality in the first quinquennium of life was equal to 97 per 100,000 living; from the latter it amounted to 79 in the same number living. In the year under notice, as in previous years, both meningeal and peritoneal tuberculosis were much more fatal in the town than in the country. Of the total deaths from tuberculosis, about a tenth part were returned as either from general tuberculosis or from "scrofula," or else from tuberculous affections of the bones or joints, and of these deaths, more than one-third were those of children under the age of five years. The mortality returned under the heading "other tuberculous diseases" differs from that from the specified forms of this infection, inasmuch as it has shown no marked tendency to decrease in recent years. The mortality ascribed to tuberculosis of bones, joints, &c., has increased slightly since 1901, whilst that from general tuberculosis has shown a slight decrease. As a registered cause of death "scrofula" appears to be disappearing almost entirely.

Pneumonia.

Notwithstanding the fact that influenza was more fatal in the year under notice than in any year since 1900, pneumonia appears by the returns to have shown a marked decline. Taken together the deaths from the different forms of pneumonia corresponded to a rate of 1383 per 1,000,000 among males, and to a rate of 988 per 1,000,000 among females. The mortality from the principal types of this disease varies considerably according to age. Thus, in 1908, as in previous years, lobar or croupous pneumonia was most fatal at the later ages, and broncho-pneumonia, whilst also dangerous at advanced ages, was most fatal in childhood.

Malignant Disease.

The returns for 1908 show still further increase as compared with past years in the mortality from malignant disease, the rate among males being equal to 813 per 1,000,000 living of that sex, or 4 per cent. more than in the previous year, whilst that of females remained practically stationary at 1027 per 1,000,000. This tendency to exceptional increase in the mortality of males has been noteworthy in the records of the last five years; but the usual diagram relating to the period 1859–1908 shows that up to the year 1891 the opposite was the rule, for the female rate was generally much greater than the male.

In the year 1908, as compared with the previous decennium, the mortality among men at most stages of life showed an increase, while among women up to the ages of 55 years a decrease was observed. Among women aged from 35 to 45 the increase of recorded cancer mortality practically ceased about 1879, when the rate was 856 per 1,000,000 living at that age, as against 863 per 1,000,000 in 1908. This is true for the age-group 45 to 55 also since the year 1891, when the mortality was 2348 per 1,000,000, as compared with 2398 in the year now under report. For the age-group 55 to 65 years the mortality curve is still on the ascendant, but its rate of increase has slackened to such an extent as to suggest that possibly this group also may repeat the experience of the earlier age-groups. Unfortunately, there is as yet no evidence of diminution in the increase of cancer mortality at any of the ages from 65 onwards. In the male sex, with its much more rapid increase of cancer mortality, the only age-group above 35 that shows any evidence of abatement in the rate of increase is that from 35 to 45, the increase at which age-group, whilst still continuing, shows a slackening during the present century which is very perceptible. Subject to certain important reservations set forth in the report, the general conclusion is that this country occupies an unenviable position with respect to mortality from cancer, the rate in England and Wales being exceeded in only two European countries—viz., Switzerland and the Netherlands. Scotland occupies a better position, and so does Ireland. Cancer mortality varies greatly in Australasia, varying from 0·74 per 1000 in Victoria, to 0·45 per 1000 in Western Australia.

Affections of Particular Organs.

Respecting the deaths from affections of particular organs, we learn that while a general decline has been observed in the fatal cases of certain so-called inflammatory disorders, there has been a general increase in those of others. In the interval between the years 1889 and 1908 the mortality referred in the aggregate to meningitis, bronchitis, laryngitis, pleurisy, and peritonitis has fallen by 45 per cent.; while the aggregate mortality from otitis, endocarditis, nephritis, enteritis, and appendicitis has risen by 52 per cent. To some extent these changes in mortality are apparent only, and depend on improved medical certification. From the answers to inquiries addressed from the General Register Office to medical practitioners concerning deaths originally certified as from inflammation of brain, larynx, or peritoneum, it appears that many of these deaths have been classed as due to puerperal sepsis, tuberculosis, diphtheria, malignant disease, cerebro-spinal fever, and other definite headings. On the authority of the medical certifiers in each case, the majority of the deaths originally returned improperly have been transferred to appropriate headings in the list of causes of death.

Puerperal Sepsis and Accidents of Childbirth.

It is satisfactory to note that the mortality among puerperal women, both from puerperal sepsis and from accidents of childbirth, is still continuing to decrease. In the year under notice the mortality from all causes whatever connected with the puerperal state was equal to a rate of 4·81 per 1000 births. It is shown by a table that of the 4521 deaths occurring among puerperal women at all ages, not fewer than 4454 were observed at ages from 15 to 45 years. If, therefore, these deaths are calculated not in the total births but on the number of women living within the same age limits, the mortality will be equal to 503 per 1,000,000, or 26 per 1,000,000 fewer than in the year 1907.

Infantile Mortality.

Discussing the subject of infantile mortality Dr. Stevenson remarks that during the greater part of the period of 28 years elapsed since 1881 there has been no fall in the rate of infant mortality in England and Wales; and he refers to tables which show that the same statement holds good as far back as the commencement of civil registration. From 1881 to 1899 the rate was slightly in the ascendant, but since the latter year that rise has been more than compensated for by

a considerable fall—a feature common to the experience of most other European countries in the same period.

Among continental countries in which a similar fall has been observed in the past few years, but not previously, may be mentioned Prussia, Denmark, and Norway. If the period of time since 1881 be divided into two portions—the first extending from 1881 to 1898, the second including the years that have elapsed since the latter date—we learn that during the earlier period infant mortality in five out of the 12 countries dealt with—viz., Prussia, Norway, Denmark, Belgium, and France—remained about stationary. That of four others—the Netherlands, Switzerland, Finland, and Sweden—fell; and the mortality of three countries only—viz., England, Scotland, and Ireland—rose somewhat during the first period. In the second period a fall took place in each of the 12 countries. This was considerable in the case of England, France, the Netherlands, Norway, Prussia, and Denmark, and less marked in the case of Ireland, Scotland, Finland, Belgium, Switzerland, and Sweden. Of the 12 countries above mentioned not one shows greater progress in this respect than does our own.

SLEEPING SICKNESS IN UGANDA.

Sir Henry Hesketh Bell, K.C.M.G., late Governor of the Uganda Protectorate, now High Commissioner of Northern Nigeria, during his recent stay in England wrote an exhaustive report on the measures adopted for the suppression of sleeping sickness in Uganda, in the hope that the experiences there gained may be of value in connexion with the solution of similar problems in other parts of Africa. The document, which is dated "Downing-street, Nov. 17th, 1909," has now been issued as a Parliamentary paper.

Historical Account: Cause of Disease and Method of Infection.

Sir Hesketh Bell traces the history of the disease from its first appearance in the Protectorate down to the present time and records the various investigations, medical and other, which have been conducted in regard to its nature and origin as well as the various measures which have been taken from time to time for its treatment and eradication. In April, 1903, the discovery that the disease was due to a trypanosome conveyed by the Glossina palpalis, a species of tsetse fly, was made in circumstances that will be familiar to everyone. Further investigations led to the collection of a considerable amount of information concerning sleeping sickness which led to the following conclusions, as summarised in a despatch addressed by the Governor to Lord Elgin, then Secretary for the Colonies, in 1906:—1. That, prior to the outbreak of the disease, tsetse flies were quite as abundant in Uganda as they are now, but that no ill effects seemed to attend their bites. 2. That the disease, generally speaking, is almost always transmitted from a sick person to a healthy one by the bite of a tsetse fly (Glossina palpalis). 3. That sleeping sickness may, in some cases, be transmitted from an infected animal, but that the risk from such a source is almost *nil*. 4. That the presence of even a single diseased person in a locality infested by tsetse flies may entail the infection of the whole community. 5. That the disease so far appears to be incurable. 6. That a tsetse fly is able to retain the power of infection for a limited period. Some experts give a limit of two days, others 14, while others consider the limit to be undefined. 7. That a more or less extended period elapses between the bite of an infected fly and the appearance of the characteristic signs of the disease. 8. That there are no authenticated instances of the transmission of the disease from sick persons to healthy ones in districts where the tsetse fly is not found. 9. That the tsetse fly is nearly always found in the near neighbourhood of fresh water, where the vegetation is luxuriant and shade abundant. That it is only found where those conditions exist and that the infected belt is a narrow one. 10. That the flies quickly abandon places where, through the clearing of vegetation, the conditions favoured by them are removed.

Measures of Prevention: Lessened Mortality.

In view of these conditions the conclusions were arrived at by the authorities that they must either try completely to exterminate all tsetse flies or else remove all infected persons from fly-infested areas. Owing, however, to the extraordinary abundance of the fly, not only on the shores of the great lakes, but also on the banks of all the principal rivers, the wholesale extermination of tsetse flies appeared to be a hopeless project. The alternative measure seemed to be within the power of the administration, and it was hoped by placing all sick persons beyond the reach of the tsetse fly to prevent the flies from procuring the means of further infection. Assuming the dicta of the experts to be correct, the insects would, after a comparatively short period, be incapable of transmitting the disease, and they would become no more dangerous than they were before sleeping sickness had appeared in the country. Eventually action was taken on the following lines: (1) the removal of all infected persons to fly-free areas and their treatment by medical officers in specially organised camps; (2) the temporary removal of all healthy persons from areas infested by flies that are presumably infected; (3) the elimination of flies as far as possible in all localities from which the population cannot be removed, and in all places through which travellers are obliged to pass; (4) further investigations into the life-history of the tsetse fly with a special view to the discovery of conditions that appear to be inimical to the fly; and (5) the study of curative agencies.

The report describes in detail the measures taken for the establishment of segregation camps, the removal of inhabitants from fly-infested areas, the clearing of forest on the lake shore, &c.—steps which have resulted in an immense reduction of the mortality from the disease. It is estimated that between 1898 and 1906 more than 200,000 souls died from sleeping sickness in the provinces of Buganda and Busoga. During 1907 the deaths were about 5000 and in 1908 3662, whilst for the first half of 1909 the returns for Buganda showed a mortality of only 459. It is believed that during the past three years no European resident in Uganda has acquired the disease.

Results of Treatment.

In spite of the continuous efforts that have been made to discover a cure for sleeping sickness, Sir Hesketh Bell thinks that not much progress has been made. Treatment by injections of atoxyl and of allied drugs, in which great hopes were at first placed, has not given the results expected. In some cases, indeed, atoxyl caused blindness to such an alarming extent that its use had to be greatly restricted. Mercury in conjunction with atoxyl seems to have given more satisfactory results, but, adds Sir Hesketh Bell, "I think I am correct in saying that we are still unable to produce a single undoubted cure among all the thousands of cases which have passed through our segregation camps or elsewhere. All that can be claimed for some of the drugs used is that, in a great number of cases, they seem to have prolonged the lives of the patients and to have somewhat reduced the acuteness of their sufferings. Sooner or later, however, the unfortunates all seem to die, and unless a therapeutic cure can soon be discovered every soul affected will succumb to the disease." This, however, is rather a sweeping statement; certainly several observers hold the opinion that atoxyl can cure a number of cases if the treatment be begun early enough in the first stages of the disease.

Period of Infectivity of Glossina Palpalis.

Early in 1909 it became necessary to modify to a considerable degree the theories which had up to then received general acceptance as to the part played by the Glossina palpalis in the transmission of sleeping sickness. It had been accepted as a fact that an infected tsetse fly carried the disease from one person to another by a simple and direct transmission of the trypanosome, and that after a period of about 48 hours the fly, unless re-infected in the meantime, ceased to be infective. On the strength of this theory it was hoped that by removing from the neighbourhood of the tsetse flies every possible source of re-infection the insects would, after two or three days, become as innocuous as they appear to have been before sleeping sickness was introduced into the country. In February, 1909, however, Dr. Kleine, who had worked with Professor Koch in the Sesse Islands, and who was then in charge of a sleeping sickness camp in German East Africa, announced that experiments had proved conclusively that the transmission of sleeping sickness was not a simple mechanical one, but that, on the contrary, it was necessary that the trypanosome should pass through a cycle in the internal organisation of the fly. This process, he

asserted, took at least 17 days, and that a fly was incapable of transmitting the disease until the expiry of that period. Dr. Kleine further reported that his experiments had proved flies to be capable of conveying infection up to the seventy-fifth day, and that the limit of their power in that direction still remained to be ascertained. Sir David Bruce has since expressed the opinion that the Glossina palpalis may retain its infectivity for two years. This discovery, though of immense importance, fortunately does not materially affect the validity of the measures taken in the campaign against sleeping sickness in Uganda. The continued infectiveness of the fly, perhaps during the whole of its malevolent life, renders still more necessary the absolute removal of every soul from every district in which those insects are found. So long as a cure for the disease remains undiscovered, nothing but a rigid *tabu* of all fly-infected localities will save the natives of Uganda from a recrudescence of the terrible disease which during the past ten years has wiped out more than two-thirds of the population of the lake shore.

Hopeful Outlook.

In concluding his report Sir Hesketh Bell takes a hopeful view of the future. "I trust," he says, "that I may not be considered presumptuous in expressing the conviction that so long as means are taken to maintain a rigid *tabu* of all fly-infested regions there will be no risk of a recrudescence of sleeping sickness in Uganda. There are still very many thousands in the Protectorate who are stricken with the disease. Failing the discovery of a cure every one of those unfortunates seems doomed to death. So long as they are kept beyond the reach of a tsetse fly they are believed to carry no risk to the healthy people among whom they may now be living. We think we are justified in believing that in the vast majority of cases every individual who may now be dying of sleeping sickness in Uganda contracted the disease before he was removed from his fly-infested home. We anticipate that the number of the affected will now steadily diminish until the mortality from sleeping sickness in Uganda becomes a matter of only minor importance."

Public Health.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

The City of Leeds.—Dr. J. Spottiswoode Cameron, the medical officer of health of this city of 477,107 inhabitants (1908), reports that the general death-rate for that year was 15·5 per 1000 and the birth-rate 24·8 per 1000. The infantile mortality was 138 per 1000 births. There are many interesting points in the report as regards the statistical comparisons of different years, but the most instructive portion, in so far as the readers of THE LANCET are concerned, is probably that which relates to the discovery of tuberculous cows in cowsheds outside the city of Leeds. Dr. Cameron observes that although the powers of inspection of cowsheds inside the city are ample, those for preventing the introduction of tuberculous milk from outside the city are much more limited. The powers as regards tuberculosis in outside cowsheds are contained in the model clauses of a Leeds Local Act of 1901, and by the provision of those clauses it is only possible to visit and examine the cows in cases where the Leeds medical officer of health is of opinion that tuberculosis is being actually caused, which means, as Dr. Cameron puts it, that "the door of the outside cowsheds is locked against us so far as legislation is concerned until the health of some of our citizens has been stolen." But in some instances a special arrangement has been made with milk purveyors, by means of which, through a clause in the contract under which the milk is purchased, it is possible to examine the sheds and the cows from which milk is sent to Leeds. Reliance has for the most part to be placed upon the bacteriological examination of milks coming in from the country, and during 1908 81 samples from 64 different farms were collected and examined. Of this total 22 yielded a positive result *quâ* tuberculosis—i.e., 25·3 per cent. of the milk samples contained tubercle bacilli. But if regard be had only to the number of farms—64—from which samples were taken it might be held that 34 per cent. were sending tuberculous milk to Leeds—a sufficiently serious indictment. Dr. Cameron also draws attention to the difficulty of discovering the cow which is yielding the tuberculous milk, and he furnishes as an illustration the case of a farm, a sample of the mixed milk from which was found to yield tubercle bacilli, although a few days previously the udders of the whole 23 cows were examined by a veterinary surgeon and found to be apparently healthy. Upon receipt of the result of the bacteriological examination the udders of the cows were all carefully examined and in only one (*a*) was there any suspicious condition, and this only a slight increase in the resistance to touch. This animal, as well as another (*b*) which had a slight cough, was isolated and a sample of milk was taken from each. One of these yielded tubercle bacilli, and shortly afterwards the whole herd, including the two cows already isolated, were carefully examined. As a result a third cow (*c*) with a suspicious induration of the udder was isolated. The remaining 20 cows appeared quite healthy and a little latter a sample of milk from the common supply of these 20 apparently healthy cows was taken and yielded negative results. But by this time all the three isolated cows had yielded tubercle bacilli. Subsequently the tuberculin test was applied to 19 of the 20 remaining cows, 14 responding distinctly and 4 doubtfully, and the milk from each separate cow was then examined bacteriologically. Only one of these 19 cows yielded a milk infecting the guinea-pig, and in this one there was no udder disease to be detected by ordinary palpation. This animal was subsequently sold to a cattle dealer, and the farmer received no complaints as to the cow.

The County of Kent.—The total population of this administrative county for 1908 was estimated at 1,037,482, and there are in all 64 sanitary authorities in the county. The birth-rate in the urban districts was 22·5 per 1000, in the rural districts 21·9 per 1000. The urban death-rate was 11·7, the rural 12·5 per 1000. Infantile mortality in the urban districts was 89 and in the rural 84 per 1000 births respectively. The Notification of Births Act, 1907, has not as yet been very widely adopted in the county, and Dr. W. J. Howarth, the county medical officer, does not regard it as desirable that at present this measure should be adopted by the county council, since there is no adequate provision for practically utilising the information obtained. At Beckenham, which is one of the districts where the Act has been adopted, stamped addressed envelopes are supplied to the various medical men and midwives, and upon one corner of such postcards are the words, "The health visitor is requested ..... to attend," the word "not" to be inserted in the blank space. It appears that this word is so frequently made use of that the question of modifying the post-card is under consideration. There are 39 isolation hospitals with some 1250 beds in the county, and Dr. Howarth reports that the well-managed hospitals are proving attractive to the public, who prefer to send their children there to having them treated at home. There are, however, still several districts in the county which possess no isolation hospital. Attention is drawn by Mr. M. G. Yunge-Bateman of Folkestone to the influence of "holiday homes" in spreading scarlet fever. He thinks that these homes ought to be registered in order to prevent overcrowding. As regards diphtheria we are glad to see that anti-diphtheritic serum is supplied free of cost to those who are unable to pay for it, and that in certain places arrangements have been made for the free bacteriological diagnosis of the disease. It is astonishing that in the country generally this latter provision is not general, as it is quite impossible to deal adequately with the prevalence of diphtheria unless suspicious sore-throats can be bacteriologically examined. With respect to enteric fever, the report before us draws attention to the fact that there is comparative excess of this disease in the three towns of Rochester, Chatham, and Gillingham, which towns are, as regards their boundaries, practically continuous and have together a population of about 130,000. Gillingham is sewered, while Chatham and Rochester dispose of their excrement in cesspits. Enteric fever is less prevalent in Gillingham than in Chatham or Rochester, but, curiously enough, the disease has increased in Gillingham since the introduction of sewerage. It seems possible that shellfish may be responsible for the excess of enteric fever in the three towns, but on this view there seems difficulty in explaining the excess of enteric fever in

Rochester and Chatham over that in Gillingham. Certain of the district medical officers of health draw attention to what they regard as the influence of flies in the spread of enteric fever, while others attribute prevalence of this disease to polluted soil. Dr. Howarth furnishes an interesting summary of the water-supplies of the county, which are obtained largely from the chalk and the green sand which are found so plentifully in this county. In some instances the borings exceed 1000 feet in depth, and in the matter of lateral adits the Ramsgate corporation has three and a half miles of these underground extensions. In a county such as Kent, where the water-bearing chalk formation is such a prominent geological feature, the subject of sewage disposal assumes special interest, and it will therefore be more satisfactory when a greater reduction has been made in the number of more or less pervious cesspits which still exist. Another of the characteristics of Kent as regards public health significance is that of hop and fruit picking, an industry which brings annually into certain districts a large influx of people who require to be looked after. The hop-pickers comprise the regular "hoppers" who reside in the vicinity of the hop fields, gypsies who live in tents and vans, and habitual vagrants. Accommodation has to be found for the foreign "hoppers" who are often accompanied by their children. In some of the hopping districts by-laws under Section 314 of the Public Health Act, 1875, have been adopted and these materially aid the work of supervision, but it appears that in the rural district of Faversham, where there were last year 8800 "foreigners," there are no such by-laws. Another nuisance which is especially liable to affect the people of Kent is that of the deposit of London manure and refuse, a fact of which travellers through this county soon become aware. In this connexion the question arises whether the metropolitan authorities who export their refuse ought not themselves to make arrangements to prevent nuisances to those districts in which such refuse is deposited.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In 76 of the largest English towns 7941 births and 4785 deaths were registered during the week ending Jan. 15th. The annual rate of mortality in these towns, which had been equal to 16·7 and 14·8 per 1000 in the two preceding weeks, rose again slightly to 14·9 in the week under notice. During the 13 weeks of last quarter the annual death-rate in these towns did not exceed 14·4 per 1000, against 15·6, the mean rate in these 76 towns during the corresponding quarter of the four preceding years 1905–08. The mean annual death-rate in London last quarter was but 14·1 per 1000, and was 0·3 below the mean rate in the 76 towns. The lowest annual rates of mortality recorded in the 76 towns last week were 3·7 in Hornsey, 5·7 in Willesden, 7·4 in King's Norton, and 8·5 in Warrington; the rates in the other towns ranged upwards, however, to 21·6 in Swansea, 22·8 in Rotherham and in Oldham, and 26·1 in Ipswich. In London the recorded death-rate last week was equal to 14·6 per 1000. The 4785 deaths registered in the 76 towns last week showed an increase of 49 on the number in the previous week, and included 288 which were referred to the principal epidemic diseases, against 291 and 242 in the two preceding weeks; of these 288 deaths, 79 resulted from whooping-cough, 61 from measles, 60 from diphtheria, 46 from diarrhœa, 24 from scarlet fever, and 18 from "fever" (principally enteric), but not one from small-pox. The annual rate of mortality from these epidemic diseases last week was equal to 0·9 per 1000, against 0·9 and 0·8 in the two preceding weeks. No death from any of these epidemic diseases was registered last week in Croydon, East Ham, Blackburn, Tottenham, or in 11 other smaller towns; the annual death-rates therefrom ranged upwards, however, to 2·3 in Rhondda, 3 8 in Birkenhead, 3·9 in Burnley, and 4 1 in Ipswich. The fatal cases of whooping-cough, which had been 109 and 77 in the two preceding weeks, rose again to 79 last week, and caused annual death-rates equal to 1·1 in Swansea, 1·2 in Plymouth and in Aston Manor, and 1·4 in Ipswich. The 61 fatal cases of measles showed an increase of 25 upon the number in the previous week; the highest annual rates from this disease were 2·6 in Birkenhead, 2·7 in Ipswich, and 2·9 in Burnley. The 60 deaths referred to diphtheria exceeded those returned in the previous week by 16, and included 18 in London and its suburban districts, 3 in Devonport, 4 in Birmingham, 4 in Manchester and Salford, and 2 each in Hanley, King's Norton, Liverpool, Barrow-in-Furness, Halifax, Bradford, Hull, Middlesbrough, and Gateshead. The 24 fatal cases of scarlet fever showed a decline; and the 18 deaths referred to "fever" only exceeded by 2 the low number in the previous week, but included 2 each in Liverpool, Oldham, Leeds, and Portsmouth. The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and in the London Fever Hospital, which had declined in the 13 preceding weeks from 2819 to 2256, had further fallen to 2172 on Saturday last; 200 new cases of this disease were admitted to these hospitals last week, against 244 and 212 in the two preceding weeks. The Metropolitan Asylums Hospitals contained 4 cases of small-pox on Saturday last. Of the 1367 deaths registered in London last week 285 were referred to pneumonia and other diseases of the respiratory system, against 360 and 338 in the two preceding weeks; these 285 deaths were no fewer than 140 below the corrected average number in the corresponding week of the five years 1904–08. The causes of 40, or 0·8 per cent., of the deaths registered last week in the 76 towns were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in Bristol, West Ham, Bradford, Newcastle-on-Tyne, Nottingham, Leicester, Salford, and in 49 other smaller towns; the 40 uncertified causes of death in the 76 towns last week included 8 in Birmingham, 5 in Preston, 4 in Liverpool, 3 in Sheffield and in Sunderland, and 2 both in Gateshead and in South Shields.

HEALTH OF SCOTCH TOWNS.

In eight of the principal Scotch towns 874 births and 604 deaths were registered during the week ending Jan. 15th. The annual rate of mortality in these towns, which had been equal to 18·9 and 20·4 per 1000 in the the two preceding weeks, declined to 16·7 in the week under notice. During the 13 weeks of last quarter the annual death-rate in these Scotch towns averaged 17·7 per 1000, and exceeded by 3·3 the mean rate during the same period in the 76 largest English towns. The annual death-rates last week in these eight Scotch towns ranged from 11·5 and 15·1 in Aberdeen and Paisley, to 23·0 in Dundee and 25·2 in Perth. The 604 deaths from all causes in the eight towns last week showed a decline of 136 from the high number in the previous week, and included 82 which were referred to the principal epidemic diseases, against 86 and 93 in the two preceding weeks. These 82 deaths were equal to an annual rate of 2·3 per 1000; the mean death-rate from the same diseases in the 76 English towns last week did not exceed 0·9 per 1000. The 82 deaths from these epidemic diseases in the Scotch towns last week included 37 from measles, 15 from diarrhœa, 10 from scarlet fever, 9 from diphtheria, 7 from "fever," and 4 from whooping-cough, but not one from small-pox. The fatal cases of measles, which had been 63 and 55 in the two preceding weeks, further declined to 37 last week, but included 31 in Glasgow and 6 in Edinburgh. The 15 deaths attributed to diarrhœa were fewer by 4 than those returned in the previous week; 4 each were recorded in Glasgow, Edinburgh, and Dundee. Of the 10 fatal cases of scarlet fever, showing an increase upon recent weekly numbers, 6 occurred in Glasgow and 2 in Dundee. The 9 deaths referred to diphtheria, an increase of 4 on those in the previous week, included 3 in Glasgow and in Edinburgh, and 2 in Dundee. Of the 4 fatal cases of whooping-cough, 2 occurred in Glasgow. The 7 deaths referred to "fever" exceeded the numbers returned in recent weeks, and included 5 in Glasgow and 2 in Edinburgh; 4 were certified as enteric and 3 as cerebro-spinal meningitis. The deaths in the eight towns last week referred to diseases of the respiratory system, which had been 181 and 172 in the two preceding weeks, further declined to 132 last week, and were 19 below the number in the corresponding week of last year. The causes of 13, or 2·2 per cent., of the deaths in the eight towns last week were not certified or not stated; in the 76 English towns the proportion of uncertified causes of death last week did not exceed 0·8 per cent.

HEALTH OF IRISH TOWNS.

In 22 town districts of Ireland, having an estimated population of 1,151,790 persons, 595 births and 492 deaths were registered during the week ending Jan. 15th. The mean annual rate of mortality in these towns, which had been equal to 25·4 and 19·7 per 1000 in the two preceding weeks, rose again to 22·3 in the week under notice. During the 13 weeks of last quarter the annual death-rate in these Irish towns averaged 19·1 per 1000, whereas the mean rate during the same period did not exceed 14·4 in the 76 largest English towns and 17·7 in the eight principal Scotch towns. The annual death-rate during last week was equal to 21·1 in Dublin, 22·7 in Belfast, 23·3 in Cork, 22·8 in Londonderry, 30·1 in Limerick, and 28·4 in Waterford; the mean annual death-rate last week in the 16 smallest of the Irish towns was equal to 19·8 per 1000. The 492 deaths from all causes in the 22 town districts during the week showed an increase of 57 upon the number returned in the previous week, and included 28 which were referred to the principal epidemic diseases, against 32 and 36 in the two preceding weeks; these 28 deaths were equal to an annual rate of 1·3 per 1000; in the 76 English towns the mean rate from the same diseases last week did not exceed 0·9 per 1000, but in the eight principal Scotch towns it was equal to 2·3. The 28 deaths from these diseases in the Irish towns last week included 22 from whooping-cough, 4 from diarrhœa, and 1 each from scarlet fever and enteric fever, but not one from small-pox, measles, or diphtheria. The 22 fatal cases of whooping-cough showed a further increase upon the numbers in recent weeks, and included 13 in Belfast, 5 in Dublin, and 2 in Waterford. The 4 deaths attributed to diarrhœa, against 7 in the previous week, were all returned in Dublin, as was the death referred to enteric fever. The fatal case of scarlet fever occurred in Cork. The deaths in the 22 town districts referred to pneumonia and other diseases of the respiratory system, which had been 183 and 110 in the two preceding weeks, rose again last week to 138. The causes of 21, or 4·3 per cent., of the deaths registered last week in the Irish towns were not certified; in the 76 English towns the proportion of uncertified causes of death last week did not exceed 0·8 per cent., and in the eight principal Scotch towns it was equal to 2·2 per cent.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Fleet-Surgeon: A. H. Jeremy to the *Andromeda* and to the *Monmouth*, on recommissioning. Staff-Surgeon: C. H. J. Robinson to the *Andromeda*, for voyage home on *Monmouth's* paying off; and L. Lindop, to the *Algerine*, additional, and on recommissioning. Surgeons: A. C. Wilson to the *Andromeda* and to the *Monmouth*, on recommissioning; T. Creaser to the *Topaze*, additional, for the *Hecla;* and G. D. Walsh to the *Andromeda*, for voyage home on *Monmouth's* paying off; F. W. Quirk to the *Dwarf*, additional, and on recommissioning; L. C. E. Murphy to the *Commonwealth;* A. H. S. Richardson to R.M. Depôt, Deal, to join on completion of foreign service leave; and J. Bourdas to the *Excellent*.

ROYAL HOSPITAL, CHELSEA.

Lieutenant-Colonel Reginald J. C. Cottell, R.A.M.C., from Deputy Surgeon, to be Physician and Surgeon, vice Colonel C. Seymour, whose period of appointment has expired (dated Jan. 1st, 1910). Major Frederick Kiddle, R.A.M.C., to be Deputy Surgeon, vice Lieutenant-Colonel R. J. C. Cottell (dated Jan. 1st, 1910).

ARMY MEDICAL SERVICE.

Colonel George T. Goggin is placed on retired pay (dated Jan. 14th, 1910).

Lieutenant-Colonel Robert Porter, from the Royal Army Medical Corps, to be Colonel, vice G. T. Goggin (dated Jan. 14th, 1910).

ROYAL ARMY MEDICAL CORPS.

Major Frederick Kiddle is seconded whilst holding the appointment of Deputy Surgeon at the Royal Hospital, Chelsea (dated Jan. 1st, 1910).

Colonel T. P. Woodhouse has been appointed Principal Medical Officer to the Scottish Command. Colonel T. J. R. Lucas, C.B., on promotion, has been appointed an Administrative Medical Officer in India. Lieutenant-Colonel R. Porter is appointed Principal Medical Officer, Western Command, England, on promotion. Captain J. F. Martin has been transferred from the Eastern Command, England, to the Royal Military College, Sandhurst, as Assistant Surgeon. Captain C. H. Carr has been appointed specialist in dental surgery, Salisbury Plain District. Lieutenant-Colonels J. M. Reid and T. B. Winter have been selected for increased pay under the provisions of the Royal Warrant.

The following distribution of selected Lieutenant-Colonels, Royal Army Medical Corps, has been issued by the Director-General, Army Medical Service:—

Aldershot Command (4): Cambridge Hospital, Connaught Hospital, Royal Army Medical Corps Depôt, and School of Instruction, Bordon.

Eastern Command (5): Royal Herbert Hospital, Woolwich; Military Hospitals at Chatham, Colchester, Dover, and Shorncliffe.

London District (2): Senior medical officer recruiting, Queen Alexandra's Military Hospital, Millbank.

Northern Command (1): Military Hospital, York.

Southern Command (4): Military Hospitals at Cosham, Devonport, Netley, and Tidworth.

Western Command (1): Military Hospital, Chester.

Scottish Command (1): Military Hospital, Edinburgh.

Irish Command (4): Royal Infirmary, Dublin; Military Hospitals at Cork and the Curragh; administrative medical officer, Belfast District.

Colonies (8): Gibraltar, Malta, Egypt, Mauritius, Singapore, North China, one each, and South Africa, two.

India and miscellaneous (21).

INDIAN MEDICAL SERVICE.

Captain J. C. H. Leicester, civil surgeon, Simla East, has been appointed to the medical charge of the Army Headquarters Staff and establishments remaining at Simla during the winter months. Captain C. H. Cross has been granted a year's leave from India. The services of Captain J. L. Lunham have been placed at the disposal of the Government of India for temporary civil employment. The services of Captain S. T. Crump are temporarily lent to Burma. Captain Lloyd is appointed professor of biology, Medical College, Calcutta. Captain Watson is placed on plague duty in Burma.

TERRITORIAL FORCE.

Royal Army Medical Corps.

1st Highland Field Ambulance: Major Ashley W. Mackintosh resigns his commission (dated Dec. 8th, 1909).

2nd Wessex Field Ambulance: David Macnair to be Lieutenant (dated Dec. 3rd, 1909).

Attached to Units other than Medical Units.—Captain and Honorary Surgeon-Major Charles S. de Segundo to be Major (dated July 2nd, 1909). Lieutenant Frederick Philip to be Captain (dated Dec. 2nd, 1909).

THE IMPERIAL ORDER OF THE OSMANIEH.

The King has given to Captain Francis John Brakenridge, R.A.M.C., licence and authority to accept and wear the decoration of the Imperial Ottoman Order of the Osmanieh, Fourth Class, which has been conferred upon him by His Highness the Khedive of Egypt in recognition of valuable services rendered by him.

THE KAISAR-I-HIND MEDAL.

Lieutenant-Colonel J. C. S. Vaughan, I.M.S., Superintendent Campbell Medical School and Civil Hospital, Calcutta, has been awarded the Kaisar-i-Hind Medal, First Class, for public service in India.

LITERARY INTELLIGENCE.—Messrs. J. and A. Churchill announce the early issue of "The Practice of Surgery," by Mr. W. G. Spencer, surgeon to the Westminster Hospital, and Mr. G. E. Gask, assistant surgeon to St. Bartholomew's Hospital; and of "Diseases of Children," by Dr. J. F. Goodhart and Dr. G. F. Still. A new edition of "Galabin's Midwifery," under the editorship of the author and Dr. G. F. Blacker, obstetric physician to University College Hospital, is also in preparation.

Correspondence.

"Audi alteram partem."

"A VICTIM TO SCIENCE": X RAY MARTYR.

To the Editor of THE LANCET.

SIR,—The whole medical profession will, without doubt, greatly appreciate the exceedingly kindly action of Sir William Treloar in bringing to public notice the lamentable condition of Mr. Cox, one of the most truly pathetic cases of scientific martyrdom the world has ever known, and will, I am sure, show considerable practical sympathy with this suffering "victim to science" by a hearty and generous response to Sir William Treloar's appeal.

Early in December last it was my painful experience to visit Mr. Cox, three weeks after his right arm had been amputated, and a more pitiable case I have never witnessed in any human being during my 32 years' professional career.

Sir William Treloar in his letter of Jan. 11th to the *Daily Telegraph* truly describes the excruciating agony Mr. Cox has endured for the past six years, which must have been borne with a fortitude beyond conception, and the many very serious and soul-wearing operations he has been compelled to undergo even to maintain the life that must be almost bereft of human consolation, but words cannot depict the awful condition of the man who has sacrificed his living and shortened and distorted his life for the benefit not only of his country but of the whole human race. His suffering, his martyrdom to the sacred cause of science means the alleviation of pain and sickness in the future of countless thousands of suffering and tortured human beings throughout the world.

This "Victim to Science" has indeed made the English nation his debtor by the extreme efforts he put forth during the dark period of the South African War, as mentioned in Sir William Treloar's communication to the *Daily Telegraph* in the following words: "Working day and night testing the appliances to ensure the utmost value of the X ray apparatus for the use of the English surgeons at the front in the South African War."

To Mr. Cox is also largely due the important invention he worked out with Mr. Hall-Edwards by means of which not only is the position of a bullet located but also its depth, so that a surgeon can now remove an obstacle with a minimum amount of suffering to the patient. Mr. Hall-Edwards, Mr. Cox's co-worker, who lost both his hands, and who, I am pleased to say, has recovered in health and, I understand, is pursuing his profession, was rightly shown his country's gratitude by being granted a pension from the Civil List, but poor Cox, whose shattered health is beyond all doubt irrecoverable, has not only lost his right arm and the middle finger of his left hand, which left hand is withered, but he is totally incapacitated and precluded from earning his living in consequence of his devotion to duty which culminated in contracting the terrible and painful malady of rodent ulcer and a most serious cancerous condition attacking his face, chin, and jaw.

Mr. Donnithorne, in his letter to the *Daily Telegraph* of Jan. 12th, undoubtedly strengthens Sir William Treloar's appeal by the statement that, "Thanks largely to the improvements originated by Mr. Cox cases of martyrdom such as his will be unheard of among future X-ray workers."

Mr. Cox was always ready to give the treatment freely to poor people who could not afford to pay. On the occasion of my visit Mrs. Cox had been occupied for two hours dressing her husband's terribly affected face, and I agree with the Reverend T. Rippon's statement in his letter to the *Daily Telegraph* of Jan. 13th: "I know not who to admire more, the patient sufferer in his agony or the brave wife who nurses him."—I am, Sir, yours faithfully,

FREDK. WM. ALEXANDER, M.R.C.S. Eng., &c.

Hardy-road, Blackheath, S.E., Jan. 18th, 1910.

PS.—Any subscriptions with a view to alleviating his most piteous sufferings will be gladly received and gratefully acknowledged by Sir William Treloar, if sent to the "Cox Fund," 69, Ludgate-hill, London, E.C. Cheques to be crossed London, City, and Midland Bank, Ludgate-hill.

ASEPSIS AND ANTISEPSIS.

To the Editor of THE LANCET.

SIR,—Sir Watson Cheyne contends that there are only three answers to the facts which he has brought forward. The second answer is to show that results as good, if not better, can be obtained by methods other than the antiseptic method. In our paper of November last we attempted to show that at the same hospital, with the same surgeons, seven in number, working during 1906 under "antiseptic," and during 1908 under "aseptic" conditions, and with their results tabulated by the same individuals making the same inclusions and exclusions of cases, the figures, so far as they went, seemed to point in favour of the "aseptic" method. Our figures may not be good, but it is possible that they do include individual results which are as good as those of Sir Watson Cheyne. But this personal equation, which, to our regret, Sir Watson Cheyne introduced into his remarks on our paper, was the very thing we wished to avoid, and it does not come within our province to extract these personal statistics out of our figures. The only really fair method of comparison would be for an independent surgeon to collect from all the London hospitals the results (1) of those surgeons using the "antiseptic" method; (2) of those surgeons using the "aseptic" method, and to exhibit them side by side. We are, Sir, yours faithfully,

HERBERT S. PENDLEBURY.
IVOR BACK.

Brook-street, Grosvenor-square, W., Jan. 17th, 1910.

To the Editor of THE LANCET.

SIR,—Sir Watson Cheyne says "there are only three answers to the facts which I brought forward in my paper of Jan. 1st: (1) to admit their importance, and look into the methods by which they were obtained; (2) to show that results as good, if not better, can be obtained by other methods; and (3) to throw doubt on the accuracy of the observations and the judicial care which had been exercised in classifying them."

To deal with the third and least important point first. I am sorry that Sir Watson Cheyne should have thought that I intended to throw doubt upon the accuracy of his observations. In assuming this to be my attitude he has missed the point of my remarks, which was to ascertain whether his criterion of wound infection was the same as my own. Since that criterion is the same—namely, the clinical observation of even the slightest trace of pus visible to the naked eye—I am satisfied that the comparison of the sets of figures given below is a fair one.

The first point can be as readily dealt with. It was, of course, the recognition of the importance of Sir Watson Cheyne's statements which led me to look into the methods by which they were obtained. Those methods include not only the details of his technique but also the criteria upon which the results were judged.

Having obtained answers to both these points from his letter and from the Bradshaw lecture to which he referred me, I am now in a position to gratify his desire to be answered according to the conditions of his second postulate. I think that the comparison which I am able to make is a fairer one than that which Sir Watson Cheyne took in his somewhat exultant paper on the subject of the St. George's statistics. As I pointed out in my previous letter, it was unfair to compare the figures of an individual surgeon with the collected statistics of a number of different operators. Moreover, as I read it, Mr. Pendlebury and Mr. Back were not putting forward their figures as the best possible results of the aseptic system, but in order to show the superiority of that system in the hands of the same operators.

I am well aware of the fallacies which attend the drawing of general conclusions from small numbers of cases. In this connexion the thousand odd cases tabulated by Sir Watson Cheyne was a small number, and those of my own of which I have accurate records—namely, of the two years during which I was resident assistant surgeon at St. Thomas's Hospital, and of the years 1908 and 1909—are still smaller. I have, however, been able to balance this drawback by tabulating the results of the last seven years of the late Mr. Clutton's personal cases at St. Thomas's. I do this because the details of my own methods are founded upon,

and identical with, those of Mr. Clutton, and because, having had the privilege of learning from him and knowing his views on this subject, I am confident that he would have been only too pleased to allow me to use his figures to demonstrate, as they do, the excellence of his technique.

—	Mr. Clutton's series.			Mr. Sargent's series.			Percentage of infection in Sir Watson Cheyne's series.
	Cases.	Infected.	Percentage of infection.	Cases.	Infected.	Percentage of infection.	
1. Radical cure of hernia ...	169	2	1·18	202	4	1·98	1·7
2. Excision of the breast ...	53	1	1·88	33	0	0	1·8
3. Operations on the thyroid gland	10	0	0	6	0	0	
4. Operations for "quiescent" appendicitis ...	136	2	1·47	53	1	1·88	1·1
5. Miscellaneous	484	7	1·44	229	2	0·87	1·9
6. Operations on the male genital organs	Included either in 1 or 5.						4
Total	852	12	1·4	523	7	1·34	1·8

Note.—The infected cases under the heading "Miscellaneous" were:—Abdominal exploration (2), torticollis (1), varicocele (1), tuberculous knee (1), orchidectomy (1), bone-grafting (1), tuberculous abscess (1), and hysterectomy (1).

The difference between Sir Watson Cheyne's practice and that of the other school really resolves itself into one of preparation for operation and not of wound treatment. In our opinion he does not employ the best means of sterilising his apparatus, trusting to chemical reagents instead of boiling; and he neglects one or two additional safeguards against infection which are so easily adopted by the use of the cap and veil. It is to this difference of technique that I attribute the difference in results, small as it is.

I am, Sir, yours faithfully,

Harley-street, W., Jan. 16th, 1910. PERCY SARGENT.

"ANÆSTHETICS" IN THE "ANNUS MEDICUS."

To the Editor of THE LANCET.

SIR,—I have only just read, in your issue of Dec. 25th last, the section of your "Annus Medicus" devoted to the subject of anæsthetics, or I should have written to you before this to draw attention to the fact that the writer of that section has completely failed to present to your readers a faithful picture of the present position of the question of legislation in regard to the administration of anæsthetics. The important step recently taken by the General Medical Council in pronouncing in favour of such legislation is so inadequately and ambiguously referred to that I doubt whether any of your readers who are unaware of this step having been taken would obtain this information from the article to which I refer. As one of the several instances of ambiguity I need only refer to the citation of three conclusions presumably arrived at by the Anæsthetics Committee of the General Medical Council. As they stand they might readily be taken to be the verbatim conclusions of that committee. They are, however, conclusions formed by the writer of the article, and instead of embodying the two most important points in the report of the committee—namely (1) the pronouncement in favour of legislation, and (2) the pronouncement in favour of two qualified persons being present at operations under general anæsthetics—they leave the reader in doubt on the first of these points and completely ignore the second. Although ambiguity may have its attractions on political platforms, it is inconvenient, if not intolerable, in medical literature. I must ask you to forgive me for speaking thus strongly, as this is the second time since the publication of the important report of the Anæsthetics Committee of the General Medical Council that I have had to draw attention to errors and ambiguities in unsigned articles in the medical press purporting to put the profession in possession of the latest phase of the anæsthetics question. The plain unvarnished fact is that the General Medical Council, having adopted *in toto* the report of a special and highly representative committee appointed to consider the desirability of legislation in regard to anæsthetics, has expressed itself in a series of 12 (not three) conclusions as favourable to such legislation, and has forwarded these conclusions to the Privy Council and to the Home Office Departmental Committee respectively. Surely this important event deserves to be chronicled in simple and intelligible language? Surely it is a highly promising and noteworthy incident, not only from the point of view of the public, but from that of the medical profession?

As one of those who took part in the movement initiated some three years ago with the object of improving the conditions under which anæsthetics are administered and of reducing the number of accidents from these agents, I am always coming across evidences such as that under consideration, of the existence of a kind of counter-movement which has all along dogged the steps of those who inaugurated the original scheme of reform. The worst features of this counter-movement are that it is insidious, indefinite, and destructive. Amongst its little band of apostles there are one or two who lose no opportunity of condemning in deprecatory or even ambiguous language all attempts to remedy conditions which they themselves know full well require reform. One would not object to the existence of this counter-movement had it as its object the furtherance of any public or professional interest. But it seems to have no object other than that of destroying the constructive policy of those who have been doing, and are still doing, their best to place general anæsthesia upon an assured basis. Fortunately the days of this counter-movement are numbered, for, thanks to the action of the General Medical Council, we are now within measurable distance of securing those urgently needed reforms which both the public and the profession desire to see established. Should the recommendations of the General Medical Council be adopted in their entirety and form the basis of an Act of Parliament the more potent anæsthetics would henceforth be administered only by registered medical practitioners, and certain less potent anæsthetics (to be scheduled as in the Poisons Act) only by registered medical or by registered dental practitioners, whilst it would be illegal, save in cases of emergency, for the person administering the anæsthetic for the purpose of inducing unconsciousness during any medical, surgical, or dental operation or procedure to be the same person who performs the said operation or procedure. The great advantages that would accrue to the public from such legislation are sufficiently obvious, whilst the blow that would be struck at quackery, and particularly at dental quackery, would be such as to encourage other departments of practice to institute similar attempts towards securing the prohibition of unqualified practice in those departments.

I am, Sir, yours faithfully,

London, Jan. 17th, 1910. FREDERIC HEWITT.

GASTRO-JEJUNOSTOMY FOLLOWED BY FATAL HÆMORRHAGE: A WARNING AS TO THE DANGER OF USING CLAMPS.

To the Editor of THE LANCET.

SIR,—As a matter of duty I send for publication the following brief notes of a case in which fatal hæmorrhage occurred after gastro-jejunostomy. I do this more readily because I am fully satisfied that the employment of clamps, which occasioned the fatality, is, in the majority of cases, wholly unnecessary.

A man, aged 26 years, suffering from chronic duodenal ulcer, was admitted into the Sheffield Royal Infirmary on April 1st, 1909. On the following day posterior gastro-jejunostomy was performed, the usual clamps for the stomach and jejunum being employed. The operation presented no special difficulty, and for some hours afterwards the patient appeared to be progressing favourably. He then became faint and vomited some dark blood. This was followed by improvement in his general condition, but during the succeeding night he suddenly collapsed and died. At

the necropsy the stomach was found to be full of blood which had come from a vein in its mucous membrane.

The occurrence of so distressing a tragedy naturally caused one to investigate critically why it should have happened and how it might be avoided in the future. My recollection of the operation was that it had been performed with every care, and although the case was my first fatal one from this cause in a series of several hundred gastro-jejunostomies it was painfully evident that, with the same technique, the accident might repeat itself.

Although employed primarily to prevent the escape of the contents of the stomach and intestine clamps act also as tourniquets to the blood-vessels and are not loosed until the inner row of sutures has been inserted and tied, after which it is no longer possible to inspect the interior of the stomach. Should this row of sutures fail to secure all the bleeding points in the mucous membranes unlimited hæmorrhage into the stomach or jejunum may take place without the operator being aware of it. The circumstances are similar to what would obtain after amputation of a limb if the wound were closed before relaxing the tourniquet. Indeed, the parallel hardly does justice to the point, for whereas apposition of the flaps in an amputation would tend to restrain bleeding from unsecured vessels no such salutary check exists in the case of a hollow organ, such as the stomach.

Obviously, then, we have here a danger inseparable from the use of clamps as ordinarily employed, and the question at once arises—Are they really necessary? If the patient has been properly prepared for operation the answer is in the negative. Proper preparation includes a preliminary fast of at least 18 hours' duration and in some cases a thorough lavage of the stomach. After this period of fasting the stomach and upper intestine will be free from food, and the small amount of fluid present will usually be devoid of dangerous micro-organisms. Moreover, by packing gauze around the site of the anastomosis any fluid that may escape on opening the digestive canal is at once taken up. During the last eight months I have performed 27 gastro-jejunostomies for non-malignant conditions without the aid of clamps. The result in every case has been quite satisfactory, and, apart altogether from the question of avoiding concealed hæmorrhage, I think the operation is more easily performed without them. By employing two artery forceps which engage the musculo-peritoneal coats of the posterior wall of the stomach at either end of the line of anastomosis efficient traction is secured and the stomach wall kept taut. When laid flat on the gauze the forceps are less in the way than a clamp would be. The jejunal loop is emptied by "milking" it, and its base is then surrounded by a fold of gauze. If this be properly done the loop will be found quite empty except for a few gas bubbles. An alternative plan is to occlude the segment of jejunum by placing a clip on either end. I employed this plan in a few of my earlier cases, but abandoned it at the suggestion of my friend Rutherford Morison. All bleeding points in the mucous membranes are secured by fine catgut ligatures previous to placing the inner row of sutures. In cases of malignant disease of the pylorus I still use the stomach clamp in performing gastro-jejunostomy, because a malignant ulcer of the stomach is almost necessarily the seat of septic organisms.

I am, Sir, yours faithfully,

SINCLAIR WHITE, M.Ch. R.U.I., F.R.C.S. Eng.,
Senior Honorary Surgeon, Sheffield Royal Infirmary,
Lecturer on Surgery, Sheffield University.

Jan. 5th, 1910.

THE PANCREATIC REACTION IN THE DIAGNOSIS OF DUODENAL ULCER.

To the Editor of THE LANCET.

SIR,—At the recent discussion upon duodenal ulcer at the Royal Society of Medicine none of the speakers alluded to the diagnostic value of the pancreatic reaction in the urine. When present, I think that it points to some definite lesion in the duodenum and would thus tend to exclude purely functional hyperchlorhydria. The pancreatic C reaction has been found in all my cases of duodenal ulcer demonstrated at the operation in which it has been looked for, and in the majority of those in which a duodenal ulcer was inferred from the symptoms.—I am, Sir, yours faithfully,

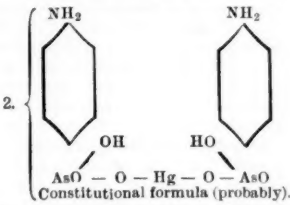
Harley-street, Jan. 17th, 1910. GEORGE HERSCHELL.

THE COMBINED MERCURIAL AND ARYLARSONATE TREATMENT OF SYPHILIS.

To the Editor of THE LANCET.

SIR,—Referring to the article contributed to your issue of Jan. 1st (pp. 23–25) by Colonel Lambkin on the Combined Mercurial and Arylarsonate Treatment of Syphilis, we are informed by the manufacturers—Vereinigte Chemische Werke A.G., Charlottenburg—that the formula for the atoxylate of mercury should be as follows:—

1. $C_{12}\ H_{14}\ O_6\ N_2\ As_2\ Hg$
Empirical formula from analysis.

2. 

Constitutional formula (probably).

Will you very kindly insert this correction, and oblige.

I am, Sir, yours faithfully,
(*per pro* R. W. Greeff and Co.)

Eastcheap, E.C., Jan. 13th, 1910. ROBERT GREEFF.

THE PARLIAMENTARY REPRESENTATION OF THE EDINBURGH AND ST. ANDREWS UNIVERSITIES.

To the Editor of THE LANCET.

SIR,—With regard to the paragraph in THE LANCET of Jan. 8th referring to Sir A. R. Simpson having agreed to contest this seat in the Liberal interest, it may be mentioned that the paragraph as sent by the writer contained a balancing clause to the clause objected to by Dr. Norman Walker in his letter in THE LANCET of last week. The clause referred to was deleted by the editorial department, no doubt for good reasons. The writer may, however, point out that Dr. Norman Walker states first that the "Scottish correspondent's information is misleading," and then proceeds to confirm it by saying that "it is perfectly true that some of Sir Alexander Simpson's personal friends very much regret that he has come forward," but he is pleased to put his own interpretation upon this expression of regret. Dr. Norman Walker as an ardent politician can only see in their regret a political motive—namely, that they regard Sir Alexander Simpson "about the strongest candidate the other side could put forward." It would seem that Dr. Walker fails to understand that the personal attachment of many of Sir Alexander Simpson's old friends should make them deeply regret having to oppose him at this time and to vote against him because he has become the public exponent and representative of political views which they do not support. It is interesting to have the suggestion that the Liberal Party is supporting Sir Alexander Simpson as a social reformer, not as a politician. Would they have equally supported him had he indicated that he would vote with the Unionists if returned?

I am, Sir, yours faithfully,
ONE OF YOUR SCOTTISH CORRESPONDENTS.

Jan. 17th, 1910.

IN THE MATTER OF "MEDICAL RESEARCH."

To the Editor of THE LANCET.

SIR,—The recent gift by Mr. Beit of two hundred odd thousand pounds for medical research was an excellent thing. It serves, however, as a strong reminder of the persistent futility of the methods adopted by the medical profession in the disposal of research funds. To institute, support, and encourage useful research work (which increases the powers of all practitioners) is an important duty and privilege of the profession. The profession's attitude, however, is an extraordinary one. It looks with an all too casual eye to the general public for the funds and means for this very thing.

What, for example, should we think of the representatives of any other industry whose attitude towards their own expansion was: "If you (the public) like to build new departments and fit them up for us, we will carry on the new work"?

I maintain that it is the duty and privilege of the entire profession to initiate and pay for organised medical research work in all its departments, and to see that it is done. It is for them to open up new avenues of advance and discovery, and to stimulate and reward those who shall produce valuable work. Apart from the schools of physiology, which are in the main actively researching, the presumed centres of research at present are the pathological departments of the hospitals. The facts are, however, that they are not instituted by funds obtained from the profession for research, and further, that with an occasional exception they produce a trifling amount of new important work. These pathological departments are engaged in teaching students, and otherwise, not unnaturally, in developing the practical, i.e., financial, aspects of pathology. How much organised and serious research on any scale, then, is initiated and supported by the profession? What, for instance, has surgery done for bacteriology? How many scholarships, research livings, or the equivalent has that branch of our profession given to the cause of advance, that branch which owes its salvation to the utilisation of the bacteriological triumphs of Lister and Pasteur? In short, what is this vast assembly of all the qualified doing for research? The answer is—practically nothing.

The total amount of research undertaken at present is comparatively a mere trifle viewed either from the standpoint of desirability or of opportunity. There are a few funds and endowments available, and the number is fortunately increasing, but what do we find by a scrutiny of their administration? Briefly and almost invariably, whatever amount is available the first step is to divide it into numerous small sums (Beit grants possibly excepted) of £100 to £150 per annum, though often less, and thus to fritter away an appreciable sum in these small grants to the juniors of the profession. These latter are usually just qualified and excellent young fellows, and the conditions of a grant are somewhat as follows: (*a*) You can only research for one year (or two years, perhaps, owing to special circumstances); (*b*) you must research in a special building (often an insuperable obstacle); and (*c*) you shall do only the research arranged for you by the director (second-hand investigations of the director), &c.

In this manner nearly all our very precious research funds are dissipated by administration which declines to pay a skilled researcher to do research work, and prefers to start off numerous novices with seldom a living, only to cry "cease" after a paltry year or two. Our colleagues, the pure scientists, who have been actively researching for a century, assure us that research work worth the name requires at least two important factors besides money; they are: a special intellectual capacity and also physical fitness of a high standard and enduring type. Moreover, results of value and importance are not likely to be obtained in one year and often not in two years, and seldom at all, indeed, by the experimenting novice, excellent and clever fellow though he be.

Valuable research work is normally obtained by the professional researcher, by the experimenter of experience and by the scientific, though practical, enthusiast working away year after year. Such is the type of man, ignored by our present administrators, who should be given a place for research and a living enabling him to do such work. This investigator's services and results are vastly more valuable than those of numerous juniors appointed to have a mere year at research. Such men appointed and maintained in adequately paid positions out of the funds that are, and are going to be, available would convince the profession and public that the money was being well spent and that such research "pays." Let these men be paid livings, rising from £500 a year to £1000 a year, for experienced and valued workers. They will do no other than research work (and won't wish to) and will bring forth their harvests, and when they fail with advancing years others must step in to maintain the struggle. As to the juniors, let them be encouraged to work on and to really grow into similar workers, and also receive a living adjusted to the requirements of maturity. In this way something would be done to put research on a serious basis and to end the present trifling with the existing funds.

It is, of course, too soon to expect the Universities to wake up and grant no one an "M.D." for less than a first-class piece of research work, whether original or inspired. In any case it is the work we want, new research work of practical use to the profession, and, moreover, many times the present yield for our own and the world's use and benefit.

I am, Sir, yours faithfully,

Jan. 10th, 1910. "PHAGOCYTE."

CHILDREN'S COURTS.

To the Editor of THE LANCET.

SIR,—Mr. Plowden recently remarked at Marylebone police court, that delinquents under the age of 16 could not breathe the same air—he meant, of course, police-court air—as prisoners above that age without risk of "contamination." What that contamination was, he remarked, he had not the slightest idea. But the meaning is, that children's courts are now to be held, and those under the age of 16 must be tried in them. Unfortunately, but five have been opened, and it seems, as a consequence, that children will have to travel considerable distances to be tried as the law now directs. That they may undergo more possible contamination in the transit, is possible. It also means considerable extra waste of time for all concerned, including, of course, members of the medical profession. Those who have been in the habit of examining children for industrial schools, say at Woolwich, must now either give up that branch of their work, or travel three miles to Greenwich; in other parts of the metropolis the distances to a children's court are even greater. The point seems that this surrender, to what is probably mere sentiment, will be expensive, and may not, after all, attain the end desired.

I am, Sir, yours faithfully,

Jan. 15th, 1910. PUZZLED.

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

Middlemore Lecture.

THE annual Middlemore lecture was delivered at the Eye Hospital by Mr. H. Eales, who chose the subject of "Myopia." The lecture was endowed with the object of interesting general practitioners in diseases of the eye, but while 600 invitations were sent out only 12 members of the profession attended, of whom four were general practitioners. The suggestion has been made that the terms of the trust should be altered in order to fulfil the testator's wishes more fully.

Smoking Concert.

At the annual smoking concert of the General Practitioners' Union the good feeling existing in the profession was well shown by the 120 members and guests present. The event is always looked forward to as providing a most enjoyable evening's entertainment. On Jan. 5th the annual dance of the union took place and similarly provided much enjoyment and opportunity to renew friendships.

Midland Home for Incurables.

The annual meeting of the supporters of this home was held at Leamington on Jan. 15th and was presided over by Lord Leigh. The cost per patient had been brought down as low as £57, notwithstanding an ample and good dietary. The ordinary revenue amounted to £7669 6*s.* 11*d.*, as compared with £7279 14*s.* 1*d.* for 1908. There were 108 patients at the end of the year, and of these 30 were absolutely confined to bed. There were 38 pensioners and 30 free beds in the home, an addition in each case of 3 on the year. During the year 22 patients died, a rather larger mortality than usual.

Post-Graduate Lectures.

The post-graduate lectures at the hospitals have now concluded. They have been much appreciated and the attendance on a few occasions has reached 50.

Jan. 18th.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

The Election.

THE whole city has been mentally and physically occupied with the great business of electioneering. How far the exertions of those actively engaged, the exposure of thousands to the vicissitudes of January weather, the overwrought feelings, the hopes and fears, the tense excitement of thousands more will affect the bills of mortality it would be hard to say, but no doubt toll will be taken.

Alcohol and the Baby.

A case is reported from Oldham which is described as "amazing." Whether it indicates amazing vice or amazing ignorance may be considered doubtful, the probability being that vice and ignorance had equal shares in the proceeding. A woman going to the market left her two children in the care of her mother. On her return she saw one of them, 22 months old, on her mother's knee looking "strange." A man in the room said, "It's drunk, it's been having something to 'sup.'" Then the grandmother stated that the man had given it "some rum and whisky." The mother took the child to a doctor and later to the infirmary, where the house surgeon said the child had been poisoned by alcohol. The grandmother was fined 10*s.* and costs, and, curiously enough, the man who had given the "sup" was let off. It is not to be supposed that this is a common occurrence in Oldham among those in the social position of these people, but it shows how dangerous is the vice of intemperance among adults, even to helpless infancy, for, on the other hand, it cannot be supposed that such cases are very rare, as the ignorance of the poor on the subject of alcohol and its being a suitable thing to give to infants is incredible and ought to be impossible.

A Lady's Medical Appointment.

The board of management of the St. Mary's and the Southern Hospitals has appointed Dr. E. Maude Marsden as house surgeon for a period of six months. The controversy on the refusal of the Royal Infirmary board to appoint ladies to resident medical positions still continues, and some consider that a statement in the Medical School Handbook issued a few years ago, and repeated in the University Calendar, that "the practice of the Infirmary is open to women on the same terms as men," and later that "the following posts are open to those who have completed their hospital practice," involve a breach of faith towards the medical women, as they consider they have been misled as to the opportunities afforded them.

Phthisis at Withington Workhouse.

The phthisis wards at the Withington workhouse hospital are said to be so overcrowded as to be a great anxiety both to the guardians and to the medical staff. It is to be hoped that a scheme at present talked of for a sanatorium, either for the Chorlton union alone, or in association with the Manchester board, will soon become an accomplished fact, for the state of things as described calls for urgent relief.

Royal Albert Asylum.

It is becoming increasingly evident to those who think much as to the condition of the feeble-minded that detention in a home for a few years of childhood only cannot lead to much permanent good. This was felt years ago by the late Sir Samuel Storey, when he provided the branch home, in connexion with the Royal Albert Asylum at Lancaster, for the prolonged or permanent care of the older girls. Even after the care and training of years the feeble-minded are not fitted to protect themselves, but have to fight the battle of life on unfair and disadvantageous conditions. It is therefore good news that the committee of the asylum has under consideration the desirability of extending the system of permanent care, and a subcommittee has been formed to consider the matter and to report to the central committee as to the best way of providing a limited scheme of permanent care. If such a scheme is developed it is to be hoped that the public will give help generously, as they have certainly done in the past.

Jan. 18th.

WALES.

(FROM OUR OWN CORRESPONDENTS.)

Proposed Incorporation of the Rhondda Valleys.

THE success which has attended the incorporation of Merthyr Tydvil, which has a population of 80,000 persons, has revived in the Rhondda valleys the movement for the incorporation of that urban district, where the present population is estimated at 133,000. Until the year 1863 the Rhondda district was included in the area of administration of the Merthyr rural sanitary authority, and in that year it became a portion of the newly-formed Pontypridd rural sanitary authority. The population of the two valleys was then about 4000. When they were formed into an urban district in 1877 the population was approaching 50,000. The area of the district is 23,000 acres and it has at the present time a rateable value of nearly £600,000. In view of these facts there would appear to be no substantial reason why a charter should not be given to the district if it is desired by the inhabitants. Incorporation not only adds to the dignity of a district but it has usually been found to increase the interest that is taken in municipal affairs.

Cardiff Infirmary.

There is now required for the support of the Cardiff Infirmary an annual income of £16,500, but as there has been for a succession of years an expenditure which has not been met by a sufficient income there has accumulated a sum of over £21,000 due to the treasurer of the institution. There are few places in which such a position would not be viewed with feelings of considerable alarm, and in Cardiff, where during the past four years some £80,000 have been subscribed towards the erection of a new out-patient department and a new wing for the infirmary, there is some little uneasiness at the large sum which is still required to place the institution upon a satisfactory financial basis. Among the proposals which have been made to secure a substantial reduction of the amount named there is one which should receive very critical investigation before it is adopted. The suggestion is that out-patients should pay 2*d.* a week for "registration" and that in-patients should pay 3*s.* a week towards the cost of food. It is estimated that the income derived from these charges would amount to about £800 per annum. The disadvantages associated with such a proposal, made as it is in connexion with an institution which is served by an honorary medical staff, are so great, so altogether out of comparison with the relatively small sum of money to be gained, that it could hardly meet with the approval of the medical profession in Cardiff.

Jan. 18th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Presentation of Portraits to Dr. T. S. Clouston, Edinburgh.

ON Monday, Jan. 10th, a company of ladies and gentlemen met in the hall of the Royal College of Physicians, Edinburgh, on the occasion of a presentation being made to Dr. Clouston. Professor Rankine presided, and said that he occupied that position as he had been a manager of the Royal Edinburgh Asylum for over 20 years. During those years his feeling had been one of ever-growing admiration for Dr. Clouston as a physician, as a man of business affairs, and as a friend. He alluded to the great works which had been carried out during the time of Dr. Clouston's superintendentship. Sir William Turner then addressed those present, and spoke of the early interest Dr. Clouston had taken in the nervous system, and how that interest had continued and matured through life. He referred also to his connexion with the University as lecturer on his own special department of medicine and to his success as a teacher. Sir William Turner then unveiled the portraits: one a full-length portrait in academic costume, which is to be hung in the hall of the asylum; the other a three-quarter portrait as a personal gift to Dr. Clouston. Both portraits are by Mr. Fiddes Watt. Dr. Clouston, in returning thanks for the portraits, spoke of his early connexion with asylum practice and of the ideals he had had in his work.

Lady Residents for a Dundee Hospital.

At a meeting of the Dundee parish council held on Jan. 10th Dr. Janet T. Miller and Dr. Jessie C. Russell were appointed senior and junior resident medical officers respectively for the East Poorhouse Hospital.

Sidlaw Sanatorium.

A conference was held on Jan. 11th between the subcommittee of the directors of the Sidlaw Sanatorium and the infirmary directors. The two points regarding which there was discussion were the duration of occupancy and the right to charge for consumptive patients. The sanatorium directors were prepared to apply for powers to hand over the buildings permanently, but the infirmary directors could not entertain the proposal. It was finally arranged that the sanatorium should be transferred to the infirmary directors for a period of ten years, and that thereafter the tenancy should be subject to a year's notice on either side. The sanatorium directors subsequently decided to withdraw from their position with regard to their power to charge patients in exceptional conditions. There is thus a complete arrangement now arrived at, and all that remains before it becomes operative is to get the approval of Mr. Caird, who gave the £10,000, and a decision from the town council to make an annual payment. There are at present only six patients in the institution. They will leave it this week and the buildings will a few days later be closed.

Jan. 18th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Dublin School of Surgery and the Peril of the Royal Colleges.

ON Jan. 15th, in the Royal College of Surgeons, a conference took place between representatives of the boards of the Royal College of Surgeons and the Royal College of Physicians, Sir E. Carson, K.C., the Right Hon. J. H. Campbell, K.C., Mr. H. Conner, K.C., and Major O'Connor, on the subject of securing a grant from Government for the school of the Royal College of Surgeons with the object of placing it upon a condition of equality with the medical schools in the new universities. The President of the Royal College of Surgeons occupied the chair, and there were also present the President of the Royal College of Physicians, the Vice-President, the Registrar, and Sir John Moore. The chairman spoke strongly of the injustice which had come to his College in the subsidy of other schools to its complete exclusion, using such arguments as those with which you have familiarised your readers when the same cause was pleaded on an earlier occasion, and both Sir Edward Carson and the Right Hon. J. H. Campbell expressed their complete sympathy, and as Members of Parliament for the University of Dublin promised to use their best endeavours with Ministers to procure the subsidy of the school by Government. Mr. Conner and Major O'Connor also promised their assistance, and the proceedings terminated with the President's thanks to the visitors. A joint appeal has now been issued by the Royal College of Physicians of Ireland and the Royal College of Surgeons in Ireland to the Fellows and Licentiates of both these institutions in the form of a printed circular letter which calls attention to the threatened extinction of the School of Surgery of the latter, and urgently implores the readers to use all their available influence with the legislative authorities for the purpose of averting the catastrophe. The only ray of hope visible to the present authorities of the "Conjoint" Colleges for prolonging the existence of the School of Surgery, and the "Conjoint" diploma dependent thereon, lies in the possibility of obtaining a grant from Parliament, and the circular letter in question has just been issued for the purpose of pointing out the anomaly that "this school, which has an unbroken record of 130 years' excellent work, should be the only institution of its kind in the country which receives no grant" from Government. The circular appeal bears the signatures of Mr. Andrew J. Horne, President of the Royal College of Physicians, and Mr. John Lentaigne, President of the Royal College of Surgeons. The names of the past leaders of professional progress in the Irish Royal College of Surgeons are indelibly stamped on the history of surgery, as is well known to all well-informed readers. For at least three-quarters of a century they occupied conspicuous places in the foremost rank of professional theory and practice. Even one generation ago the School of the Royal College of Surgeons was the largest in Ireland, and the sacrifices which it has made in the interests of professional amalgamation and progress should surely not be turned against it.

Gas-poisoning in Belfast.

At the inquest on the death of Alderman J. Rooney, who died from gas-poisoning on Jan. 7th, Dr. W. J. Wilson, lecturer on hygiene in the Queen's University of Belfast, deposed that, with Mr. J. H. Totton, B.Sc., county analyst of Armagh, he had found that the blood of the dog discovered in the bedroom where Mr. Rooney had died was saturated with carbon monoxide to the extent of 76 per cent. Their conclusion was that the dog died from carbon-monoxide poisoning. They had also examined samples of the gas supplied to the city of Belfast and found that the average per cent. of carbon monoxide in it was 20·3. Ordinary coal-gas, free from carburetted water-gas, had from 6 to 8 per cent. of carbon monoxide. Therefore, the supply of the city of Belfast contained at least 12 per cent. of carbon monoxide above the average for coal-gas. In poisoning by gas the carbon monoxide, and it alone, was the lethal agent. The Departmental Committee on Water-gas, which reported to the Home Office in 1899, recommended that the limit of carbon monoxide in gas supplied during the eight hours should be 12 per cent. Dr. Wilson said his conclusions were that the number of accidents referable to the use of mixed gas increased approximately as the cube of the gain in percentage of carbon monoxide. Thus, if the percentage of carbon monoxide were increased from 6 to 12, the chance of being poisoned was not twice, or even four times, but eight times as great as before the increase; and if the carbon monoxide became three times as abundant as heretofore, the chances of being poisoned became increased no less than twenty-seven-fold. The manager of the gas-works in Belfast said that in the Belfast carburetted water-gas there was about 32 per cent. of carbon monoxide, as compared with 50 per cent. in Liverpool and Bath, 51 per cent. in Dublin and Southport, and 40 per cent. in the Gas Light and Coke Company which supplied the City of London. Belfast was lower than these places, and for the last three months of October, November, and December the average in Belfast gas was 46 per cent. of water-gas and 54 per cent. of coal-gas. At the time of the accident he thought the gas would be about at full pressure, and he would say that the meter was passing about three cubic feet per minute or about 100 cubic feet per hour, at the time. He was of opinion that death must have ensued in about ten minutes or a quarter of a hour from the time that Mr. Rooney became subject to the gas. The arrangement of piping he saw under the floor of the room in which the accident occurred was highly dangerous, as there should always be a space between gas-pipes and pipes conveying electric wires, but the corporation had no power to regulate the laying of piping throughout a house. Other evidence showed that the mistake made in the installation of gas and electricity was in having allowed a branch of a gas-pipe to come in contact with the casing carrying the electric wire. The jury found that "Death was due to accidental gas-poisoning," adding a rider that more care should be taken in the laying of gas-pipes close to electric wires.

Jan. 19th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Treatment of Sciatic Neuralgia.

THE best general treatment for neuralgic conditions of the sciatic nerve consists, according to M. Caussade and M. Queste, in epidural injections of a local anæsthetic. In describing their observations at a recent meeting of the Société Médicale des Hôpitaux they said that cases of an extremely severe, paroxysmal, and inveterate character had sometimes recovered very quickly, and even immediately, after a single injection of 1 or 2 centigrammes of cocaine; in general, however, and especially in chronic cases, the treatment had to be repeated. The amount of pain that was present should be regarded as the guide to the estimation of the appropriate dose of the anæsthetic, and when the pain was very severe there should be no hesitation to

inject as much as 6 or 8 centigrammes of cocaine or stovaine at a time. In the neuralgic conditions of the sciatic nerve attributed to rheumatism, to cold, or to some diathesis, the question was one of radical cure; whereas in the forms, which appeared to be symptomatic of diseases such as syphilis or malaria, or to be due to compression, the treatment must be merely palliative. Sometimes the tender points of Valleix continued to be painful, but this lingering symptom disappeared in a few weeks after the treatment. In some exceptional cases M. Caussade and M. Queste observed that pain disappeared in the distal portion of the lower limb while persisting in the proximal part of the sciatic nerve. There was also a paradoxical effect which deserved notice—namely, the disappearance of the tender points of Valleix, although the ordinary neuralgic pain continued as before. Among more than 30 patients treated as above described, some of them with large doses of the local anæsthetic, there was only one who suffered from toxic manifestations, the symptoms not being at all serious.

Ambulatory Treatment of Fractures of the Femur.

At a meeting of the Surgical Society held on Dec. 29th, 1909, M. Reynier presented a report on the ambulatory treatment of fractures of the femur by means of an apparatus invented by M. Savariaud. Two patients who had made use of the apparatus in question had been shown by M. Savariaud at a previous meeting of the society; they were able to walk after the second day following the accident and they recovered without either any shortening of the limb, any muscular atrophy, or any stiffness of the joints. In applying the apparatus M. Savariaud first anæsthetised the region of the fracture by means of cocaine. A large anterior splint extending from the fold of the groin to the root of the toes was then placed in position and tarlatan impregnated with plaster was applied to the sides of the limb and so arranged that one strip occupied the inner portion of the fold of the groin, while the other was in contact with the crest of the iliac bone. This compound splint was held together by means of plaster bandages and was allowed to become dry, care being taken during the process of drying to make vigorous traction on the lower portion of the limb. As already mentioned, the patients walked after the second day; for 15 days they went on crutches and afterwards used a cane; the apparatus was removed on the fiftieth day. M. Lucas-Championnière and M. Tuffier said that they were not in favour of appliances which enabled patients to walk at an early stage. In their opinion the surgeon's efforts should be directed principally to the coaptation of the fragments which ought to be held end to end as much as possible and to be truly aligned.

Sporotrichosic Arthritis of the Knee.

A case of sporotrichosic arthritis of the knee was recently shown by M. Moure at a meeting of the Société Médicale des Hôpitaux. The disease began as an ordinary hydrarthrosis and subsequently presented the appearance of tuberculous arthritis, with production of a series of suppurating nodules along the thigh. The sporotrichium Beurmanni was discovered in a state of purity in the fluid from the joint and in the pus from the osseous and subcutaneous gummata. Rapid recovery ensued on treatment with iodine.

Treatment of Chilblains.

According to M. Jacquet and M. Jourdanet chilblains are caused by a conflict of multiple irritations. In a communication on this subject read at a meeting of the Academy of Medicine held on Jan. 4th they said that one factor in these irritations was the influence of cold or rather of rapid and repeated alternations of cold and heat, whilst another factor consisted of various organic reflexes. The effect of these causes was that the vascular system of the skin suffered from functional impairment with the production of stasis, erythema, engorgement, and ulceration. In treatment the first consideration was exercise and elevation of the extremities. Very frequently—every hour if possible—the patient, sitting comfortably on the edge of a bed, should raise his arms to their full height for several minutes, at the same time making with his hands, and especially with his fingers, rapid and alternating movements of complete flexion and extension. Similar exercises of elevation and movement were applicable to the feet, the patient being either seated or recumbent. During the intervals between these exercises care should be taken not to let the hands hang down or swing to and fro, and when there were chilblains on the toes the person should keep as much as possible in the horizontal position with the feet raised. Of course, the extremities should be well protected against cold. After a few days of this treatment the local asphyxia diminished, the doughy condition disappeared, and the stiff and swollen fingers resumed their natural condition. Massage might then with advantage be added to the exercises already described, the best form of it being gradual kneading of the tissues.

Treatment of Tuberculosis by Marmorek's Serum.

M. Letulle has for 14 months been making trials of Marmorek's serum in the treatment of tuberculosis, and at a recent meeting of the Société Médicale des Hôpitaux he gave some details of a successful case. The patient was a man suffering from tuberculous pyrexia with bacilli in his sputum and signs of advanced pulmonary lesions. Everything possible had been done for him in the way of hygienic and dietetic treatment. The giving of the injections was soon followed by phenomena of anaphylaxis and a great rise of temperature, which necessitated discontinuance of the injections. Enemata were then resorted to and in eight months 500 cubic centimetres of serum were administered in this way. The patient's general condition was now considerably improved; he had gained in weight, the pyrexia had quite come to an end, the physical signs showed little change, but the bacilli had entirely disappeared from the sputum.

Jan. 17th.

SWITZERLAND.

(FROM OUR OWN CORRESPONDENT.)

The Medical Curriculum in Switzerland.

AT two special meetings of the Cantonal Society of Medical Practitioners in Zürich, held in December last, and attended by over a hundred medical men, including nearly all the professors of the Medical Faculty of the University of Zürich, some most important discussions with regard to the reorganisation of the medical curriculum took place. The great interest taken in these discussions was evidenced by the fact that the first one lasted for four hours and the second one for seven hours (from 4 to 11 P.M.). At present the medical student devotes a minimum of five half-yearly terms to the study of botany, zoology, chemistry, physics, comparative anatomy, anatomy, and physiology, and a minimum of five terms to the clinical study of medicine. Two things are at present obvious and call for readjustment—namely, that the student is overworked, and that the time devoted to clinical medical studies should be prolonged, if necessary at the expense of the general preclinical subjects. A proposal to eliminate the study of botany, zoology, and comparative anatomy from the medical curriculum was negatived by a large majority. An almost unanimous desire, however, was expressed that the preclinical studies should be reduced to four terms. This should be made possible by instituting special courses of lectures for medical students in botany, zoology, and chemistry which should replace the present lengthy courses of general lectures on these subjects. On the other hand, it was thought desirable that the clinical studies, which would thus last six terms, should be increased by one more term to seven, so that the whole medical curriculum could be completed in five and a half years. It must be mentioned here that the majority of students already extend their studies to five and a half and six years. A proposal to add one year to the medical curriculum which the student should employ in practical work as a hospital assistant was negatived by a large majority, as this innovation adopted some years ago in Germany had not proved a success. A motion proposing a reduction of the number of foreign medical students (especially Russians) was not passed, as the statistics compiled by the University authorities showed that owing to stricter rules with regard to matriculation, &c., the number of foreign students had greatly decreased. Two years ago there were 178 foreign students of whom 104 were Russian women, as compared with 102 Swiss students. At present, however, the number of foreigners had declined to 68, of whom 24 were women, whereas the number of Swiss medical students has remained almost stationary (99).

Zürich, Jan. 15th.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Syphilitic Disease of the Hypophysis.

AT a recent meeting of the Ophthalmological Society in Vienna Dr. Lauber showed a patient suffering from a condition which has hitherto been observed and recorded only twice. The case was that of a man, 28 years of age, who had become blind a week before admission to the hospital. Examination showed total amaurosis of the left eye with otherwise normal conditions. The right eye had a visual power of 0·9 and was affected with temporal hemianopsia, but was otherwise normal. The patient confessed to having contracted syphilis four years ago. Amongst other symptoms violent headaches and a polyuria of 13 pints in 24 hours were present. X ray examination showed a deepening of the sella turcica, whereupon a diagnosis of syphilitic disease of the hypophysis was arrived at. Daily inunctions with 8 grains (0·5 gramme) of grey ointment were ordered, and after three weeks a distinct improvement appeared. The treatment was continued for three months, a total of 84 inunctions being given, with the result that when the patient was discharged from the hospital his right eye had become normal, the visual power of the left eye was 1·30, and there was temporal hemianopsia, with atrophy of the optic disc. A few weeks later he returned to the hospital because his sight was again affected. After 35 inunctions of grey ointment his symptoms improved again, so that he is practically now in the same condition as when he left the hospital the first time. The diagnosis has not been made on the living patient before, and as already mentioned only two cases have been hitherto recorded.

Refusal of Payment for Notification of Infectious Diseases by Medical Men.

During the debate in the Austrian House of Peers on the new law regulating medical affairs in this country the two medical representatives amongst the peers—namely, Professor Toldt and Professor Ludwig—moved that a fee of 1 krone (10*d.*) should be paid to the medical practitioner for each case of infectious disease notified by him. Hitherto this kind of work was required to be done free of charge. The entire sum necessary to cover the expenses of this innovation would amount to no more than 75,000 kronen or a little over £3000. The two professors endeavoured to show that this recognition of the medical men's work was more of the nature of an ethical appreciation than a real payment, but the suggestion was not accepted. The attitude of the majority of peers towards our profession was clearly illustrated by the remark of one of the members that "the doctor gets paid by his patient, so the State need not be called upon." The important rôle played by the practitioner in preventing the spread of diseases to the house of a labourer as well as to the mansion of the lordly was promptly explained, but without effect. It must be regretted that once more a hope of the general practitioner has been disappointed.

Murderous Attack on a Surgeon.

A sensation has been caused in Vienna by an incident which nearly cost a famous surgeon his life. Professor G. Alexander, the well-known otologist, upon whom the title of extraordinary professor has been quite recently conferred, had operated a few years ago upon a man for a "saddle" nose. The patient, however, did not find the result come up to his expectations, and he therefore had a second operation performed by another surgeon, but with no better success. The dissatisfied patient promptly sued both surgeons for damages on the ground of alleged malpractice, but he was non-suited by the court, and all his subsequent appeals to the higher courts were dismissed. He thereupon manifested mental symptoms of the type of paranoia querulatoria, and quite recently attempted to assassinate Professor Alexander by shooting at him twice at close quarters. Luckily the professor escaped unhurt. The incident illustrates one of the dangers incidental to surgical work, since claims for malpractice have been very often raised of late apparently for blackmailing purposes. It is to be feared that the example set by this patient may find imitators, especially if at the trial the jury brings in a verdict of "Not guilty, because of unsound mind." The English friends of Professor Alexander will be glad to hear of his lucky escape.

Destruction of a Hospital by Subsidence and Inundation.

A most unusual and lamentable occurrence took place quite recently in Raibl, a mining district south of Vienna, where there are extensive deposits of coal and metallic ores. Owing to the excavations there had been subsidences of the surface in several places, and a few days ago a small hospital belonging to a mining company, and standing within the threatened area, was observed suddenly to shift its position, after which it disappeared all at once in a chasm and a few minutes later the entire mass of débris and rock was covered by water. No patients happened to be in the hospital at the time, but the medical officer, his family, and the hospital attendants all perished.

The Use of Light in the Treatment of Tuberculosis.

The Austrian Society for the Prevention of Tuberculosis has been making arrangements for the purpose of obtaining accommodation for tuberculous patients in certain mountain villages, where the climatic conditions permit patients of this kind to remain during winter. Thus in the Tyrolese mountains, in Gries, Bozen, Meran, and also in the vicinity of Vienna, at the Semmering mountain range children will be accepted for the so-called light cure as practised in Leysin and reported upon by Dr. Monti. The ultra-violet rays, whether coming direct from the sun or reflected from the snow, are believed to produce a marked effect upon tuberculous conditions which are not too far advanced, and it is stated that the children in the colony of Leysin have been benefited in a degree that justifies imitation of the methods followed in that institution. The children to be sent to the new colonies are selected from the inmates of the children's hospitals, all those showing pyrexia being rejected.

Jan. 17th.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

The Water-supply of Toronto.

IT has been decided that the water-supply of Toronto is to be filtered by means of the slow sand filtration process. This decision has given a certain amount of dissatisfaction to some of the citizens who are in favour of ozonisation by the agency of electricity. In Lindsay, a small town of Ontario, there has been installed recently an electric filtration plant to purify the town's water-supply. The principle of the system now in vogue in Lindsay is said to be the same as that of the plants employed in several German and French towns. The process of purifying the water in Lindsay is a modification of what is known as the Siemens Schuchert ozone system. The supporters of this system in Toronto and in Lindsay insist that as a method of water purification it is far superior in efficiency to any, and that it is also the cheapest process known. Erlwein, who is the chief electro-chemist at the Siemens Schuchert works in Berlin, has estimated that with a large plant the cost might be as low as about ½ cent, less than ¼*d.*, per 1000 gallons. At the Fourteenth International Congress of Hygiene and Demography, held in Berlin in 1907, a discussion on the ozone purification of water was initiated by French delegates, and the method was thus commented on by THE LANCET representative: "It is sharply distinguished as being a sterilising and not a clarifying process, and its use presupposes that the water is practically free from suspended organic matter." In a few words, ozonisation of water by electricity is mainly a sterilising process, and as such stated by good authorities to be an extremely efficient one. But before it undergoes this process it must be filtered, through sand or otherwise, to eliminate all solid matter. The fact, however, that ozone does destroy some organic matter is seen in the change which takes place in dark-coloured waters to a greenish-blue. The Toronto Board of Health and its upholders contend that the ozonisation of water has not been tested for a sufficiently long period nor on a large enough scale to warrant its substitution for the slow sand filtration process, which has proved its value by many years of use in large cities and small towns in all parts of the world.

Pollution of the Niagara River at Niagara Falls.

At a meeting of the New York State sanitary officers held recently in Rochester, N.Y., Professor W. T. Sedgwick of the

Massachusetts Institute of Technology, stated that in his opinion Niagara Falls was one of the worst plague spots, if not the very worst, in regard to typhoid fever in the United States. The speaker pointed out that the sewage pollution of Niagara Falls was a question not of merely local but of national and international importance, for Niagara was visited annually by hundreds of thousands of persons, many of whom contracted typhoid fever there. Professor Sedgwick asserted that the existing state of affairs at Niagara Falls was a public disgrace to New York State and to the United States at large. There is a chute at Niagara Falls through which the garbage of the city is discharged into the river, and it is declared on good authority that dead horses, cats, and dogs are often dumped down this chute. Sanitary conditions at Niagara, of course, closely concern us here.

Ontario Provincial Board of Health Experimental Station in Toronto.

Dr. C. Hodgetts, Secretary of the Ontario Provincial Board of Health, has been chiefly instrumental in establishing an experimental station in connexion with the board on the outskirts of Toronto. For a long period there has been great dissatisfaction with the manner in which the sewage of Toronto has been disposed of and also with the water-supply. The disposal of the sewage and the question of a pure water-supply are so intertwined that one cannot be dealt with alone.[1] It has been decided recently that the sewage of Toronto shall be discharged into Lake Ontario at a safe distance from the water-supply intake, and that the former shall also be treated before it is so discharged. Furthermore, as I have said above, the water-supply is to be filtered. The object of the erection and equipment of the experimental station by the Ontario Board of Health is to provide proper facilities for experimenting in the treatment of sewage and in the purification of water, and the building put up by the board appears to be well adapted for the purpose. It is a long wooden building, containing laboratories, offices, and an apartment in which are placed the means for conducting the necessary experiments. These in part consist of large wooden tanks ranged along each side of the room, the receptacles on one side containing sewage and those on the other side water. The sewage is pumped into the tanks from an adjacent sewer by the agency of an electric engine, and the water is similarly forced into the remaining tanks from a main close by. The sewage in the vicinity of the station is well suited in some ways to the purpose of experiment, as it is particularly thick and foul. The action upon it of various chemicals is now being carefully tested.

Toronto, Jan. 8th.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

Plague.

PLAGUE returns for the week ending Dec. 11th, 1909, show 5736 deaths, against 4013 in the week preceding. Bombay Presidency reported 644; Bengal, 343; the United Provinces, 2432; the Punjab, 1287; Burma, 61; the Central Provinces, 450; Central India, 44; Rajputana, 284; and Mysore State, 88. Plague has decreased in Nagpur city, where only 61 deaths occurred during the week, but there were 143 in the district.

Calcutta Hospitals.

From statistics compiled by the Government of Bengal it appears that the number of admissions to the various leading hospitals in Calcutta is increasing year by year, and in order to meet the growing demand which is made on these institutions it has been found necessary to provide additional accommodation. But these additions are not all that is necessary, as a corresponding addition must be made to the nursing staff. In order, therefore, to provide for a larger staff of nurses the Calcutta Hospital Nurses' Association is making a special appeal to the leading European and Indian residents of Calcutta for contributions, estimated at about half a lakh. This sum, it is understood, the local Government is unable to provide; hence the necessity for the appeal.

A Hospital at Muscat.

Muscat is advancing with the times, a prominent mark of progress being the recent laying of the foundation-stone of a hospital which is to be erected upon a site that has been presented by certain of the Sultan's subjects who are resident in Zanzibar. The plans were originally framed by Mr. Totaram, Supervisor of the Indian Public Works Department, in accordance with the wishes of His Highness the Sultan, in consultation with the present British Consul, his predecessor, and leaders of several communities in Muscat, the plans having been subsequently examined and revised by the executive engineer, Karachi Canals District, who also secured the services of a local contractor, Mir Mahomed Baloch, to carry out the work, towards which Rs.60,000 have already been subscribed. The building has been designed with commendable attention to secure privacy for women and to meet the needs and idiosyncrasies of the various classes who may resort to the institution. In inviting the Sultan to lay the foundation-stone H.B.M.'s Consul referred to a preliminary meeting held on Feb. 6th last to devise measures to erect the projected building and to His Highness's generous contribution towards the cost of the work and to the encouragement it has consistently received at his hands since that date. The object of the meeting had been steadily kept in view. Excavations for the building began last August, and the work had so far progressed that hopes are entertained that the structure will be completed by April next. In conclusion, the Consul expressed the hope that as the stone His Highness was invited to lay was the foundation of a hospital, the hospital itself might be the foundation of other works of charity and public good in his dominions, and tend to unite in a common bond of fellowship and community the various races of divergent creeds and conflicting interests over which he rules. Finally, the Consul said he trusted that the hospital, when completed, might prove a monument of the Sultan's enlightenment and public spirit and of the charity and generosity of the subscribers to the movement. He presented His Highness with a trowel with which the formal ceremony was performed.

Obituary.

Major J. C. Weir, R.A.M.C., died suddenly from cholera in the early hours of Dec. 20th on board the *Damukdia*, the Sara Ghat steamer. Major Weir, who was sanitary officer of the Lucknow command, had been spending a few days at Darjeeling and was on his way to Calcutta. He was buried at Calcutta on Dec. 21st with military honours.

Dec. 22nd, 1909.

[1] THE LANCET, Dec. 11th, 1909, p. 1778.

Obituary.

GEORGE SKENE KEITH, M.D. EDIN., F.R.C.P. EDIN., L.R.C.S. EDIN., LL.D. ABERD.

A STRIKING figure has passed away from the medical stage with the death of Dr. George Skene Keith at the great age of 90 years, the attainment of which he himself attributed to his adoption of the simple regimen laid down both in his two essays entitled "Fads of an Old Physician" and "A Plea for a Simpler Life," and in his "Papers on Sanitary and other Matters," which made a considerable stir some 15 years ago. These essays were based upon principles which Dr. Keith had preached and observed for many years, having adopted them at a time when the current of medical opinion was distinctly hostile to them, and he had to put up with some laughter and some misrepresentation in consequence.

Dr. Skene Keith was born at St. Cyrus, near Montrose, in 1819, being the second son of the Rev. Dr. Alexander Keith, who contributed several books on prophesy to theological literature. He was educated at the Grammar School and at the University of Aberdeen, where he was prize taker in all the classes at the Marischal College, and subsequently proceeded to Edinburgh, where he took his M.D. degree in 1841. In the same year he became L.R.C.S. of Edinburgh, and four years later a Fellow of the Royal College of Physicians in the same city, after studying at Pesth (now Budapest) and in Paris, as was not unusual for promising British graduates of medicine in those days. At Edinburgh he was the head medalist in the first of the great Simpson's classes, and it is on record that he was the first person whom Simpson anæsthetised with chloroform. Leaving Edinburgh shortly afterwards to practise for a year in Rome, Skene Keith returned to Scotland in 1845 and again settled in the capital, where he was associated in

practice for five years with Sir James Simpson and continued subsequently as a physician with increasing practice and reputation until his retirement in 1880. At one time he is said to have had the largest practice in Edinburgh. In 1895 he was made LL.D. of the University of Aberdeen.

As a youth he had acquired a taste for travel, having visited Palestine with his father, and during the last 30 years of his retired life he sojourned in many parts of the world, and being a keen amateur photographer brought home many interesting mementoes of his journeys. In 1849 he married Euphemia, daughter of Robert Hislop of Prestonpans, by whom he had one son and four daughters. As we have said, it was by his revolutionary ideas of diet and medicine that he was best known. During the busiest time of his practice he began to suffer from such severe sick headaches that he had serious thoughts of giving up work, but writing to a professional brother in Manchester he was strongly advised to give up meat instead, to cut down stimulants of all sorts, and to rely for treatment on a rigid diet and rest in bed when he felt ill. These principles he adopted with such success that he prescribed them for many patients. He gave no alcoholic stimulants and very few drugs, though he was a great believer in the alterative virtues of liquorice, and there can be little doubt that, though he was an extremist, his influence was valuable during a period of medical practice still too much addicted to polypharmacy. His "Plea for a Simpler Life" was published in 1895. It was written pleasantly, tersely, and with a sense of honest conviction. Two years later an expanded version of the book appeared under the title of "Fads of an Old Physician," which contained an outline of Dr. Keith's daily diet. His chief meal was dinner at 1 P.M., consisting of vegetable or fish soup, followed by not more than three ounces of fish, with potato and another vegetable, stewed fruit and cream, or pudding, or fruit tart. Once or twice in the week he might substitute not more than 2 ounces of lamb or game, rabbit or tripe for the fish. He had the greatest respect for hot water, which he believed to be a valuable stimulant, and though he used alcohol very sparingly he never preached total abstinence. We have recalled his habit of living in some detail because, to use a homely proverb, no man ever found more satisfactory proof of his pudding in the eating of it than he. It need hardly be said that Dr. Skene Keith was held in veneration by a large body of friends and acquaintances, and the medical profession must regret the snapping of a link with the days of Bell, Brodie, and the Coopers.

JOHN W. WATSON, M.D., M.CH. R.U.I., L.R.C.P. & S. EDIN.

AFTER a period of failing health, due to gradually advancing cardiac disease, Dr. J. W. Watson, the oldest medical practitioner in Limavady, died at his residence in that town—situated in the centre of Co. Derry—on Jan. 10th, at the age of 64 years. Dr. Watson studied at Queen's College, Belfast, and in 1871 graduated M.D. of the Queen's (afterwards the Royal) University; he was also a Licentiate of the Royal Colleges of Physicians and Surgeons of Edinburgh. While a student he resided in the old Royal Hospital, Belfast, as a contemporary of Dr. John W. Browne, chairman of the present medical staff of that institution (the Royal Victoria). He began practice in Limavady, where he became dispensary doctor, and 30 years ago he succeeded the late Dr. Albert Lane as medical attendant at the workhouse. He was on one occasion President of the North-West (Ireland) branch of the British Medical Association. He held several important appointments, being medical attendant for the Midland Railway Company at Limavady, the local police, post office, and he was officer of health of Limavady urban and rural districts. Dr. Watson had also a large private practice, but a few months ago his state of health obliged him to resign his public appointments. Until quite recently he was chairman of the urban school committee and manager of Limavady National School. He married a daughter of the late Mr. W. Osborne, J.P., of Altmover, and he leaves two daughters, his wife, a sister of Mr. H. D. Osborne of Belfast, having died a few years ago. Dr. Watson was a man popular alike with poor and rich, and he will be greatly missed in Limavady.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced :—Professor Brissaud, an eminent Paris neurologist, aged 57 years. He took charge of Charcot's ward at Salpêtrière for a year and published his "Leçons sur les Maladies Nerveuses." His clinical lectures at the Hôtel Dieu were very popular.—Dr. C. J. Snijders, an aged Dutch practitioner, who translated several English novels into his own language. In early life he had been a ship's surgeon, and after settling down in practice worked up his classics privately in order to qualify for a university degree. This he succeeded in obtaining with "highest honours" at Utrecht in 1862, his thesis being on "Eclampsia Gravidarum."—Dr. P. Lesshaft, formerly professor of anatomy in the University of Kazan.—Dr. Assunto Spediacci, extraordinary professor of surgical pathology in the Sienna Medical School.—Dr. Erik Johan Widmark, professor of ophthalmology in Stockholm.—Professor F. C. Valentine, a well-known New York surgeon, whose specialty was the diseases of the genito-urinary system.

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the second professional examination of the Conjoint Examining Board in Anatomy and Physiology held on Jan. 6th, 7th, 10th, and 11th, 78 candidates presented themselves, of whom 49 passed and 29 failed. The following are the names of the successful candidates :—

William Stuart Armitage, St. Mary's Hospital; William Somerset Birch, King's College; Auguste Rene Bourgault-Ducondray, University College; William Hackett Broughton, Manchester University; Robert Graham Brown, London Hospital; Kenneth Bleckly Clarke, Guy's Hospital; Eric Clarence Cline, Guy's Hospital; Alfred Beuthin Danby, Guy's Hospital; Hinton de Silva, L.M. & S. Ceylon, Ceylon Medical College and King's College; Stephen Ormond Dolan, Leeds University; John Dotto, St. Bartholomew's Hospital; Paul Dvorkovitz, St. Bartholomew's Hospital; Gertrude May Flumerfelt, Royal Free Hospital; Harold Cane Godding, Guy's Hospital; John Greene, Birmingham University; Percy Douglas Hamilton, Charing Cross Hospital; Frank Cornwell Hunot, Guy's Hospital; Edmund Basil Jardine, University College; Evan Lawrence Jones, Guy's Hospital; Nagubai Moreshewar Joshi, L.M. & S. Bombay, Grant Medical College, Bombay; Kaikobad Bejonji Kanga, L.M. & S. Bombay, Grant Medical College, Bombay, and King's College; Nawin Chand Kapur, B.A., Lahore and University College; Francis Harry Kelly, Middlesex Hospital; Gordon Burnham King, University College; Gerald Laurence, Middlesex Hospital; Eadbert Ralph Longstaff, St. Bartholomew's Hospital; Margaret Josephine McEnery, Royal Free Hospital; Kalka Prasad Mathur, Lahore Medical College and London Hospital; William Henry Matthews, Charing Cross Hospital; Alexander George Hains Moore, Guy's Hospital; Constance Anderson Mortlock-Brown, Royal Free Hospital; Chandrashekha Damodar Pande, Bombay and King's College; Stylianos George Papadopoulos, St. Bartholomew's Hospital; Danevattege Don Philip Perera, Ceylon Medical College and University College; Ardeshir Beheramshah Pestonji, B.A., L.M. & S. Bombay, Bombay and London Hospital; Walter Graham Reynolds, St. Mary's Hospital; Geoffrey Bower Richardson, St. Bartholomew's Hospital; William Barwise Sanders, University College; George Douglas Sherwood, B.A. Cantab., Cambridge University and Middlesex Hospital; Thomas Sidney Stafford, Birmingham University; James Simpson Strachan, London Hospital; Arnold Rothwell Taylor, Manchester University; Arthur Tilbury, Guy's Hospital; Maurice Lawrence Treston, London Hospital; Watkin Watkins, University College, Cardiff, and London Hospital; Clement Arthur Webster, Manchester University; Noel Tancred Whitehead, St. Thomas's Hospital; Miles Astman Knight Wood, St. Bartholomew's Hospital; and William Worger, Bristol University.

FOREIGN UNIVERSITY INTELLIGENCE.—*Algiers:* The Schools of Superior Instruction have now been combined together and their aggregate status raised to that of a complete university with the right to confer degrees. The medical and pharmaceutical schools will form a combined or "mixed" faculty.—*Berlin:* Dr. Anton Stricker, Prosector to the Surgical Clinic in the Ziegelstrasse, has been granted the title of Professor.—*Berlin (Kaiser Wilhelm's Akademie):* Dr. Schwiening, senior staff surgeon, who has been *Referent* in the Medical Department of the Ministry of War, has been appointed Professor of State Medicine.—*Berne:* Dr. T. Christen has been recognised as *privat-docent* of Medicine.—*Bonn:* Dr. Doutrelepont, Director of the University Dermatological Clinic, is about to retire, and his post will be filled by Dr. Erich Hoffmann, Extraordinary Professor of Dermatology in the University of Halle.—Dr. Gustav Embden, *privat-docent* of Medicine, has been granted the title of Professor.—*Budapest:* The Professorship of Physiology, vacant by the death of Dr. Ferdinand Klug, has been offered to and accepted by Dr. Ladislaus Udránsky, Lecturer

on Physiology in the University of Clausenburg.—*Cincinnati (Miami Medical College):* Dr. William B. Wherry has been appointed Adjunct Professor of Pathological Anatomy and Bacteriology.—*Erlangen:* Dr. Hermann Merkel, *privat-docent* of Pathological Anatomy, has been granted the title of Extraordinary Professor.—*Florence:* Dr. Paolo Stefanelli has been recognised as *privat-docent* of Internal Pathology.—*Freiburg:* Dr. Paul Diepgen has been recognised as *privat-docent* of the History of Medicine.—*Halle:* Dr. Friedrich Fromme, *privat-docent* of Gynæcology and Oberarzt in the Gynæcological Clinic, has been granted the title of Professor.—*Heidelberg:* Dr. Otto Rioth, who was formerly Assistant in the Anatomical Institute and afterwards in the Gynæcological and Surgical Clinics, has been appointed Chief Surgeon to the new hospital in Baden-Baden in succession to Dr. Baumgärtner. Dr. Leo Müller, Assistant in the University Medical Clinic, has been appointed Chief Physician in the Baden-Baden Hospital.—*Innsbruck:* Dr. Alfred Greil, *privat-docent* of Anatomy, has been promoted to an Extraordinary Professorship.—*Lemberg:* Dr. Johann Mazurkiewicz has been recognised as *privat-docent* of Psychiatry.—*Munich:* A new Institute of Forensic Medicine is being established, of which Professor M. Richter will have charge.—*Pittsburg:* Dr. Ralph E. Sheldon has been appointed Adjunct Professor of Anatomy.—*Rome:* Dr. Ermanno Fioretti has been recognised as *privat-docent* of Operative Medicine and Dr. Giulio Nardelli as *privat-docent* of Experimental Pharmacology.—*St. Petersburg (Military Medico-Chirurgical Academy):* Dr. V. P. Voyachek has been recognised as *privat-docent* of Laryngology and Otology.—*Vienna:* Dr. Franz Chvostek, Extraordinary Professor of Medicine, has been granted the title and rank of an Ordinary Professor. Dr. S. Ehrmann and Dr. Georg Joannovics have been promoted to Extraordinary Professorships of Dermatology and Pathology respectively. The following have been granted the title of Extraordinary Professor: Dr. Ferdinand Alt, *privat-docent* of Otology; Dr. Konrad Büdinger, *privat-docent* of Surgery; Dr. Johann Paul Karplus, *privat-docent* of Neurology; Dr. Oskar Foederl, *privat-docent* of Surgery; Dr. Joseph Halban, *privat-docent* of Gynæcology; Dr. Joseph Hockauf, *privat-docent* of Pharmacology; Dr. Gustav Alexander, *privat-docent* of Otology; and Dr. Sigmund Fraenkel, *privat-docent* of Chemistry.—*Washington:* Dr. Frederick S. Russell has been appointed Professor of Pathological Anatomy and Bacteriology in succession to Dr. Joseph J. Kinyoun resigned.—*Würzburg:* Dr. Oskar Polano, *privat-docent* of Midwifery and Gynæcology, has been granted the title of Extraordinary Professor.

ROYAL SANITARY INSTITUTE LECTURES.—The forty-ninth course of lectures and demonstrations for sanitary officers will be held during the months of February to April. The first part, consisting of 24 lectures and dealing with sanitary law, the duties of sanitary inspectors, sanitary appliance, elementary science, statistics, and so forth, will commence on Monday, Feb. 7th, and will be continued on successive Mondays, Wednesdays, and Fridays. The second part, dealing with the inspection of food, the hygiene of slaughter-houses and food stores, and the laws governing the inspection and sale of food, will commence on April 15th, Mondays, Wednesdays, and Fridays being also the lecture days. This part of the course, consisting of seven lectures, closes on April 29th. On some of the lecture days and also on Saturdays demonstrations and inspections will take place at various municipal and public buildings conducted for the most part by sanitary inspectors and superintendents of public health departments. Mr. G. Quin Lennane, medical officer of health of Battersea, will conduct the inspection and demonstration at the Battersea Disinfection Station, Mortuary, and Shelter, and Mr. R. Glover, F.R.C.V.S., will conduct the inspection and demonstration at Harrison and Barber's knackers' yard. The lecture hour is 7 P.M. The lecturers include Dr. Charles Porter, medical officer of health of Marylebone; Mr. A. W. Harris, medical officer of health of Lewisham; Dr. G. F. McCleary, medical officer of health of Hampstead; Dr. E. J. Steegmann; Professor H. R. Kenwood; and Dr. E. Petronell Manby, medical inspector to the Local Government Board. The fee for the complete course is £3 3*s.*, or for Part I., £2 12*s.* 6*d.*, and for Part II. £1 1*s.* On Feb. 16th a course of lectures and demonstrations on sanitary science as applied to buildings and public works will commence and be continued on successive Mondays, Wednesdays, Fridays, and Saturdays. The lecture hour is 7 P.M. and the fee for the course is £2 12*s.* 6*d.* A course consisting of lectures and practical demonstrations on physiology, personal hygiene, and the sanitation of school buildings and dwellings intended to assist students entering for the examinations on hygiene in its bearing on school life, and for women health visitors and school nurses, will commence on Monday, March 14th, at 7 P.M. The fee is £1 1*s.* The lecturers for this course include Dr. Eric Pritchard, Dr. A. B. Kingsford, Dr. C. J. Thomas, and Miss Marion Hunter-Vaughan. Further particulars can be obtained from the secretary of the Royal Sanitary Institute, 90, Buckingham Palace-road, S.W.

PRESENTATION TO A MEDICAL MAN.—The combined staffs of the Wakefield Workhouse and Infirmary have presented William Roulston, M.D., M.Ch. R.U.I., with a handsome set of silver candelabra as a mark of their esteem on his resignation from the post of medical officer to the workhouse, which he has held for the past 24 years. The presentation was made in the board-room of the workhouse on Jan. 3rd. Mr. Herbert Beaumont, J.P., who presided, Mr. Bunter, the master of the workhouse, and other officials all testified to the kindness of heart of the recipient. One of the candlesticks bore the following inscription: "Presented to William Roulston, Esq., M.D., M.Ch., M.A.O., by his fellow officers at the Wakefield Workhouse and Infirmary, in recognition of services rendered to them during his 24 years' medical officership."

DONATIONS AND BEQUESTS.—Mr. Benjamin Stretton, of Hammerwich House, near Lichfield, has forwarded a cheque for £1000 to the Derbyshire Royal Infirmary as a New Year's gift.—Sir Gilbert Greenall, Bart., has given £1000 towards the liquidation of the debt of £4000 on Warrington Infirmary and Dispensary.—By the will of the late Mrs. Jane Rosa Haywood the following bequests have been made: £1000 each to St. Thomas's Hospital, the London Hospital, Whitechapel, the Cancer Hospital, Brompton, the Brompton Hospital for Consumption and Diseases of the Chest, and the Royal Hospital for Incurables, Putney, for the endowment of a bed to be known as the "Jane Rosa Haywood" bed; £1000 to the British Home for Incurables, Streatham, to endow a bed in memory of "my dear parents" William and Jane Wake; £500 to the Hospital for Sick Children, Great Ormond-street (for the endowment of a bed to her memory), and £500 to the London Ophthalmic Hospital. The testatrix also left £250 to the Stockwell Orphanage Convalescent Home, Cliftonville, Margate.—By his will Mr. Henry Hugh Clutton, M.A., M.C. Cantab., F.R.C.S., senior surgeon at St. Thomas's Hospital, who died on Nov. 9th, left £1000 to his wife, £100 to his niece Lucy Clutton, £100 to each indoor and outdoor servant of 20 years' service, £50 to each indoor and outdoor servant of ten years' service, £200 to S. J. Sharkey, and £300 to his brother Walter Clutton. In the event of failure of issue or in the event of the surviving child or children being daughters, and such daughters dying without leaving issue, then subject to any appointment in favour of any of husbands of such daughters, the deceased left the sum of £15,000 to be paid to the trustees of the Medical School, St. Thomas's Hospital, to form a bequest known as "Clutton Bequest," to be held by the proper officers or any trustees to be appointed by them to pay the income for the development of the pathological side of clinical medicine and surgery.—£46,170 2*s.* 2*d.* Probate dated Jan. 4th, 1910, was obtained by the Public Trustee Office, 3 and 4, Clement's Inn, W.C., and this fact, in view of Mr. Clutton's known business ability, can hardly fail to draw attention to the advantages which this office may afford to members of the medical profession.—The late Miss Ellen Morrison, by will, bequeathed £5000 to the Royal Berks County Hospital, £2000 to the King Edward VII. Hospital Fund, £1000 to the Meath Home of Comfort at Godalming, £500 to the Helena Nursing Home at Reading, and £500 to the Clevedon Convalescent Home.—Under the will of the late Mr. William Watson of Newcastle-on-Tyne the Royal Victoria Infirmary of that city will receive £5000 for the endowment of a ward for children in memory of his wife and himself. The Prudhoe Memorial Convalescent Home will receive £300, as will also the Consumption Hospital at Barrasford.—The late Sir Alfred Jones left a sum of about £500,000 upon trust for such charitable purposes and objects in

England (or any British possession on the West Coast of Africa) as his trustees may in their absolute discretion think fit. The testator makes for the guidance of the trustees in the administration of the trust the following suggestions as to purposes to which it might be applied: The advancement, benefit, or support of education or science, and original research of all kinds into the cause of disease on the West Coast of Africa.—The *Times* states that the late Mr. D. Ogden Mills left, among other bequests, £20,000 to the Home for Incurables, New York, and that the late Sir George Shenton, of Crowley, Perth, Western Australia, has left £1000 to the Children's Hospital, now in course of erection, for endowing a cot in the name of his son.

DIPHTHERIA IN HAMBURG.—In consequence of the existing prevalence of diphtheria in Hamburg the sanitary authority, after listening to the views of the Medical Practitioners' Association, decided to publish in the daily newspapers a warning to parents urging the necessity of prompt medical advice on the appearance of sore throat. The authority has also voted £150 for the expense of combating the disease, and especially for the provision of serum in cases where the patients are not in a position to pay for it. A medical practitioner has only to mark his prescription for serum, "To be charged to the Sanitary Department," to obtain it from the nearest pharmacy free. Regulations are also promulgated concerning official assistance in the bacteriological diagnosis.

POOR-LAW GUARDIANS AND CONSUMPTIVES.—At the conference of East Sussex boards of guardians held at Lewes on Jan. 12th to consider the question of the treatment of consumptives a wide divergence of opinion on the subject was shown. It seemed to be agreed that isolation was necessary, but as to the proposal to erect a joint sanatorium (one delegate described such a course as "lumping the patients together in order to keep them separate") the cost of the proposed building was a deterrent to several delegates, while isolation treatment by each union of its own cases was much favoured. Ultimately it was decided that it was desirable that accommodation should be provided for the treatment and isolation of phthisical cases separate and apart from the sick wards of Poor-law institutions, and a committee was appointed to prepare a scheme for submission to its respective boards. Figures presented at the conference showed that there are roughly 100 phthisical patients chargeable to the rates in East Sussex, 40 being inmates of infirmaries, and 60 being in receipt of out-door relief. As this number is spread over 12 unions the figures for each are not large, and the cost of isolation in the cases of the 40 inmates should not prove a very big task to the guardians; while in the cases of the patients receiving outdoor relief the relieving officers could perform a good work by urging upon the patients to do all that is possible to fight against the disease by taking the usual precautions, and avoiding common habits which go towards the spread of the infection.

SOCIETY FOR RELIEF OF WIDOWS AND ORPHANS OF MEDICAL MEN.—A quarterly court of the directors of the above society was held on Jan. 12th at 11, Chandos-street, Cavendish-square, W., Dr. G. F. Blandford, the President, being in the chair. Fourteen directors were present. Eight new members were elected and one death was reported. Since the last court one of the annuitants of the charity had died; she had been in receipt of grants since January, 1867, her husband had been a member for three years and had paid in subscriptions £6 6*s.*; his widow received in grants £2900, and one of her children, a cripple, is still receiving £20 per annum from the Copeland Fund of the society. This instance speaks for itself as to the great advantage to be derived by joining the society. The sum of £518 was distributed in December last as a Christmas present, each widow receiving £10, each orphan £3, and each orphan on the Copeland Fund £5. The funds of the society now admit the annual grants to orphans being raised from £12 to £15 per annum, and a sum of £1238 was voted to pay the half-yearly grants. Six letters were received since the last court from widows of medical men asking for relief, but this had to be refused as their husbands were not members of the society. Relief is only granted to the widows and orphans of life members or ordinary members of at least three years' standing. The invested funds of the society now amount to £100,071. Further particulars and application forms for membership may be obtained from the secretary at the offices of the society, 11, Chandos-street, Cavendish-square, London, W. The next election will be on April 13th, and forms must be sent in two clear weeks before the first Wednesday in April.

Mr. Laming Evans, F.R.C.S., 36, Bryanston-street, W., and Dr. G. A. H. Barton have been elected secretaries of the Harveian Society of London.

AT a meeting of the Canadian Medical Association held in Winnipeg recently it was decided to establish an official journal for the Association.

BRISTOL MEDICAL CHARITIES.—During 1909 the employees of Messrs. W. D. and H. O. Wills collected £735 for the Bristol medical charities. The workpeople of Messrs. E. and A. Robinson subscribed £282 for the Bristol medical charities during 1909.

THE BRISTOL DISPENSARY.—The annual report of the Bristol Dispensary for 1909 states that during the year 10,993 patients were treated, an increase compared with 1908. 687 midwifery cases were attended, compared with 536 in the preceding year.

METROPOLITAN HOSPITAL SUNDAY FUND.—At a meeting of the Metropolitan Hospital Sunday Fund held at the Mansion House on Jan. 18th, Mr. G. H. Makins, C.B., and Mr. E Parker Young were elected members of the distribution committee.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a meeting of the Council on Jan. 13th the diploma of M.R.C.S was conferred upon Mr. Arthur Cecil Hamel Rothera, M.A. Cantab., Cambridge University and St. Mary's Hospital, who has now complied with the necessary requirements.

ROYAL BLIND PENSION SOCIETY.—The committee of this society has the privilege of nominating suitable candidates for certain special pensions of £20. Applicants must be widows or unmarried daughters of medical men, totally blind, and in necessitous circumstances. Forms of application and particulars can be obtained of the secretary, 237, Southwark Bridge-road, London.

KING'S COLLEGE (UNIVERSITY OF LONDON).—A course of eight lectures on Recent Progress in Physiological Chemistry will be delivered in the Physiological Laboratory at King's College on the following Mondays at 4.30 P.M.:—Dr. O Rosenheim: Physiological Chemistry of Proteins, Lipoids, and Putrefaction on Jan. 24th and 31st, Feb. 7th, 14th, and 21st. Dr. F. S. Locke: The Metabolism of Muscle and the Energetic Aspect of Vital Metabolism on Feb. 28th, March 7th and 14th. The course is free to all members of King's College, to all students of medical schools in London, to all internal students of the University of London, and to medical practitioners on presentation of their cards. The course is recognised as a B.Sc. honours course by the University of London.

BOOKS, ETC., RECEIVED.

AMBROSE COMPANY, LIMITED, London.

Spiritualism and Insanity. By C. Williams. Price, cloth, 1*s.* 6*d.* net; paper, 1*s.* net.

Religion and Insanity. By Charles Williams, L.R.C.P., L.R.C.S., L.S.A. Price, cloth, 2*s.* 6*d.* net; paper, 1*s.* 6*d.* net.

APPLETON, D., AND COMPANY, New York and London.

Medical Sociology. A Series of Observations touching upon the Sociology of Health and the Relations of Medicine to Society. By James Peter Warbasse, M.D. Price 8*s.* 6*d.* net.

ARGOSY (THE), COMPANY, LIMITED, Demerara.

The British Guiana Medical Annual for 1908. Edited by K. S. Wise, M.B., B.S., B.Sc. Lond. Univ., M.R.C.S. Eng., L.R.C.P. Lond. Sixteenth Year of Issue. Price 5*s.*

BAILLIÈRE, J. B., ET FILS, Paris.

La Pratique des Maladies des Enfants, Diagnostic et Thérapeutique. III. Maladies de l'Appendice et du Péritoine, du Foie, du Pancréas, des Reins, du Sang, des Ganglions et de la Rate. Par Haushalter, Castaigne, L.-G Simon, et Leenhardt. Price Fr.12.

CHARITIES PUBLICATION COMMITTEE, New York.

Visiting Nursing in the United States. Containing a Directory of the Organisations Employing Trained Visiting Nurses, with Chapters on the Principles, Organization, and Methods of Administration of such Work. By Yssabella Waters. Price $1.25, post paid.

CLARENDON PRESS, Oxford.

Herbert Spencer and Animal Evolution. The Herbert Spencer Lecture. Delivered at the Museum on the 2nd December, 1909. By Gilbert Charles Bourne. Price 1*s.* 6*d.* net.

DORNAN, WILLIAM J., Philadelphia.

Transactions of the American Surgical Association. Volume the Twenty-seventh. Edited by Richard H. Harte, M.D., Recorder of the Association. Price not stated.

Transactions of the American Gynecological Society. Volume XXXIV. For the year 1909. (McDowell Centennial.) Price not stated.

FISCHER, GUSTAV, Jena.

Handbuch der Gesamten Therapie. In sieben Bänden. Herausgegeben von Dr. F. Penzoldt und Dr. R. Stintzing. Vierte umgearbeitete Auflage. Achte Lieferung. Price M. 4.50.

Phono-Kardiogramme. Von Professor Otto Weiss. Siebente Heft der "Sammlung Anatomischer und Physiologischer Vorträge und Aufsätze," herausgegeben von Prof. Dr. E. Gaupp und Prof. Dr. W. Nagel. Price M.1.50.

Die Individualisierende Operation der Inveterierten Scheiden-Damm-Mastdarm-Risse. Von Otto Küstner. Price M. 3.50.

FROWDE, HENRY, AND HODDER AND STOUGHTON, London.

Oxford Medical Publications. Diseases of the Heart. By James Mackenzie, M.D., M.R.C.P. Second edition. Price 25*s.* net.

Oxford Medical Publications. Male Diseases in General Practice. An Introduction to Andrology. By Edred M. Corner, M.A., M.C. Cantab., B.Sc. Lond., F.R.C.S. Eng. Price 15*s.* net.

FROWDE, HENRY, London.

The Harveian Oration on Experimental Psychology and Hypnotism. Delivered before the Royal College of Physicians of London. Oct. 18th, 1909. By George H. Savage, M.D., F.R.C.P. Price 1*s.* net.

GREEN, WILLIAM, AND SONS, Edinburgh and London.

A Practical Guide to Meat Inspection (Walley). Fifth edition. Rewritten and enlarged. By Stewart Stockman, M.R.C.V.S. Price 10*s.* 6*d.*

HENRY PHIPPS INSTITUTE, Philadelphia.

Fifth Annual Report of the Henry Phipps Institute for the Study, Treatment, and Prevention of Tuberculosis. Edited by Joseph Walsh, A.M., M.D. Price not stated.

HIRSCHWALD, AUGUST, Berlin.

Über die Berechtigung des Teleologischen Denkens in der Praktischen Medizin. Festrede gehalten am Stiftungstage der Kaiser Wilhelms-Akademie für das Militärärztliche Bildungswesen, 2. Dezember, 1909, von A. Bier. Price Pf.40.

Die Vergleichende Pathologie der Haut. Von Dr. med. Julius Heller. Price M.24.

INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND, London.

A List of Official Chemical Appointments. Compiled, by direction of the Council of the Institute of Chemistry and under the supervision of the Proceedings Committee, by Richard B. Pilcher, Registrar and Secretary of the Institute of Chemistry. Third edition, revised and enlarged. Price 2*s.* net; post free, 2*s.* 3*d.*

JONES, CHARLES, LIMITED, London.

Thornton on Patents. (British and Foreign.) The Pith of Patent Law and Practice in the United Kingdom and Abroad, with Rules, Forms, Examples, and Precedents. By Alfred Augustus Thornton, Consulting Patent Agent. Price 21*s.* net.

KARGER, S., Berlin.

Jahrbuch für Kinderheilkunde und Physische Erziehung. Unter Redaktion von O. Heubner, A. Steffen, Th. Escherich. 71, der dritten Folge. 21. Band. Heft I. Ausgegeben am 4 Januar, 1910. Price not stated.

KING, SELL, AND OLDING, LIMITED, London.

The Science Year Book, Diary and Scientific Summary. 1910. Edited by Major B. F. S. Baden-Powell. Price 5*s.* net.

KNIGHT, CHARLES, AND CO., LIMITED, London.

Space and Spirit. A Commentary upon the Work of Sir Oliver Lodge, entitled "Life and Matter." By R. A. Kennedy. Price 1*s.* 6*d.* net.

LAMB, FREDERICK J., London.

Transactions of the Medico-Legal Society for the year 1908–1909. Edited by Digby Cotes-Preedy, M.A., and William A. Brend, M.A., M.B., B.Sc. Vol. VI.

LEHMANN, J. F., München.

Sehprobentafeln zur Bestimmung der Sehschärfe für die Ferne. Von Dr. F. v. Ammon. Mit 8 Tafeln und einer erläuternden Text-beilage. 2 vermehrte Auflage. Price M. 4.

LEWIS, H. K., London.

Some Common Remedies and Their Use in Practice. By Eustace Smith, M.D, F.R.C.P. Price 3*s.* net.

METHUEN AND CO., London.

The Hygiene of School Life. By Ralph H. Crowley, M.D., M.R.C.P. Price 3*s.* 6*d.* net.

PHARMACEUTICAL PRESS, London.

The Chemist's Annual and P.J.F. The Pharmacist's Diary and Year-book, 1910. Including additions to the Pharmaceutical Journal Formulary. Edited by John Humphrey. Price 5*s.* net.

PINTOS AND CO., Rio Grande, Brazil.

A Proposito da Peste Bubonica no Rio Grande. Memoria apresantada na Sessão Extraordinaria do Centro Medico de Pelotas de 6 de Novembro de 1907. Pelos Doutores Feliciano Teixeira da Matta Bacellar João Francisco Lopes Rodrigues, Augusto Duprat, Euclides Mirò Alves, Pio Angelo da Silva, Clinicos da Cidade do Rio Grande. Price not stated.

SANITARY PUBLISHING CO., LIMITED, London.

The Sanitary Record Year-book and Diary, 1910. Price 2*s.* 6*d.* net.

SAUNDERS (W. B.) COMPANY, Philadelphia and London.

Medical Gynecology. By Samuel Wyllis Bandler, M.D. Second revised edition. Price, cloth, 21*s.* net.

SCIENTIFIC PRESS, LIMITED, London.

The Midwife's Pronouncing Dictionary of Obstetrical and Gynæcological Terms. Edited by Henry Robinson, M.A., M.D. Price 1*s.*

SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION (Secretary, W. D. Haggard, Nashville, Tenn.).

Transactions of the Southern Surgical and Gynecological Association. Volume XXI. Twenty-first Session. Held at St. Louis, Mo., Dec. 15th, 16th, and 17th, 1908. Edited by W. D. Haggard, M.D. Price not stated.

STEINHEIL, G., Paris.

Éléments d'Obstétrique. Par le Dr. V. Wallich. Deuxième Edition. Price Fr 8.

La Cure Radicale de la Hernie Inguinale. Leçons Professées à l'Hôtel-Dieu. Par le Docteur Lucas-Championnière. Price Fr.3.50.

UNWIN, T. FISHER, London and Leipsic. (GARDEN CITY PRESS, LIMITED, Letchworth.)

Practical Housing. By J. S. Nettlefold. With a Preface by the Right Hon. Alfred Lyttelton, K.C., M.P. Popular edition. Price, paper, 1*s.* net; cloth, 2*s.* net.

WHITAKER, J., AND SONS, LIMITED, London.

Whitaker's Peerage, Baronetage, Knightage, and Companionage, for the year 1910. Price not stated.

WRIGHT, JOHN, AND SONS, LIMITED, Bristol. (SIMPKIN, MARSHALL, HAMILTON, KENT, AND CO., LIMITED, London.)

Open-air at Home. Practical Experience of the Continuation of Sanatorium Treatment. By Stanley H. Bates. With Introduction by Sir James Crichton-Browne, M.D., D.Sc., LL.D., F.R.S. Price 2*s.* 6*d.* net.

YEAR BOOK PUBLISHERS, Chicago.

The Practical Medicine Series. Under the General Editorial Charge of Gustavus P. Head, M.D. Volume IX., Skin and Venereal Diseases, Miscellaneous Topics. Edited by W. L. Baum, M.D., and Harold N. Moyer, M.D. (Series 1909.) Price 5*s.* net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BLOXSOME, H. E., M.R.C.S., L.R.C.P., has been appointed House Surgeon at the Evelina Hospital for Sick Children, Southwark.

COPE, V. ZACHARY, M.D., M.S. Lond., has been appointed House Surgeon at the Chelsea Hospital for Women.

DEARE, Major B. H., I.M.S., has been appointed House Surgeon at the Chelsea Hospital for Women.

GOBRIE, P., M.B., Ch.B. Edin., has been appointed House Surgeon at the Chelsea Hospital for Women.

GUNNING, C. J. HOPE, M.R.C.S., L.R.C.P. Lond., has been appointed Ophthalmic Clinical Assistant for London County Council purposes at St. George's Hospital.

HEATH, OLIVER, B.C. Cantab., &c., has been appointed Assistant Curator of the Museum and Assistant Pathologist at St. Mary's Hospital.

MAWBY, F. W., L.S.A., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Littleport District of the county of Cambridge.

MAYER, CLIFFORD, M.D., B.S. Lond., M.R.C.S., L.R.C.P., D.T.M. & H. Camb., has been appointed Chief Medical Officer to the State of Baroda, and Physician to the Gaekwar.

MILLER, JANET T., M.B., B.S. Glasg., has been appointed Senior Resident Medical Officer at the East Poorhouse Hospital, Dundee.

PEARCE, H. G., L.D.S. R.C.S., has been appointed Honorary Dental Surgeon to the North Devon Infirmary, Barnstaple.

RAYMENT, E. W., M.B., C.M. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Pewsey District of the county of Wilts.

RUSSEL, JESSIE C., M.B., B.S. Glasg., has been appointed Junior Resident Medical Officer at the East Poorhouse Hospital, Dundee.

SHAPLAND, HUBERT R., L.D.S. R.C.S., has been appointed Honorary Dental Surgeon to the North Devon Infirmary, Barnstaple.

STEADMAN, F. ST. J., M.R.C.S., L.R.C.P. Lond., L.D.S., has been appointed Honorary Dental Surgeon to the Metropolitan Hospital.

WATSON, C. GORDON, F.R.C.S. Eng., L.R.C.P. Lond., has been appointed Assistant Surgeon to St. Bartholomew's Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BOOTLE BOROUGH HOSPITAL.—Honorary Physician. Also Clinical Assistant. Salary £50 per annum.

BRISTOL DISPENSARY.—Medical Officer.

BRISTOL ROYAL INFIRMARY.—Honorary Assistant Dental Surgeon. Also Honorary Dental Anæsthetist.

BRISTOL UNIVERSITY.—Demonstrator of Anatomy. Also Demonstrator of Physiology. Salary £180 per annum each.

BRITISH LYING-IN HOSPITAL, Endell-street, W.C.—Resident Medical Officer. Salary at rate of £50 per annum.

BURNLEY, VICTORIA HOSPITAL.—Resident Medical Officer. Salary £100 per annum, with residence, board, and washing.

CANTERBURY, KENT AND CANTERBURY HOSPITAL.—House Physician, unmarried. Salary £70 per annum, with board and lodging.

CHELTENHAM GENERAL HOSPITAL.—House Physician and House Surgeon, unmarried. Salary £70 per annum each, with board and lodging.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—Junior House Surgeon. Salary £60 per annum, with board, apartments, and laundry.

GLAMORGAN COUNTY COUNCIL.—Medical Officer for Inspection of School Children. Salary £300 per annum with travelling expenses.

HÔPITAL FRANÇAIS, 172, Shaftesbury-avenue, W.C.—Senior Resident Medical Officer, unmarried. Salary £100 per annum, with full board and laundry.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—House Physician, unmarried, for six months. Salary £30, with board and residence.

KELLING OPEN-AIR SANATORIUM.—Resident Medical Officer. Salary £250 per annum, with house.

LEEDS, HOSPITAL FOR WOMEN AND CHILDREN.—House Surgeon for six months. Salary is at rate of £50 per annum, with board, residence, &c.

LEEDS INFECTIOUS DISEASES HOSPITALS AND SANATORIUM.—Resident Medical Officer, unmarried. Salary at rate of £110 per annum, with board, lodging, and washing.

LEEDS TUBERCULOSIS ASSOCIATION SANATORIUM, Gateforth, near Selby.—Resident Medical Officer for six months. Salary at rate of £100 per annum, with board, lodging, and washing.

LEEDS UNIVERSITY SCHOOL OF MEDICINE.—Research Assistant. Salary £100 per annum.

LIVERPOOL UNIVERSITY CANCER RESEARCH LABORATORY.—Research Worker. Salary £150 per annum.

LONDON MISSIONARY SOCIETY.—Lady Doctor.

LONDON TEMPERANCE HOSPITAL.—Assistant House Surgeon for six months. Salary at rate of 100 guineas per annum.

LONDON THROAT HOSPITAL, 204, Great Portland-street, W.—House Surgeon. Salary £50 per annum.

MANCHESTER, MONSALL FEVER HOSPITAL.—Third Medical Assistant for six months. Salary at rate of £100 per annum, with board, lodging, and washing.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Park-place, Cheetham Hill-road.—Assistant Medical Officer. Salary £25 per annum. Also Honorary Assistant Physician.

MANSFIELD, BOROUGH OF.—Medical Officer of Health and Medical Inspector of School Children. Salary £400 per annum.

OLDHAM INFIRMARY.—Second House Surgeon. Salary £100 per annum, with residence, board, and laundry.

OXFORD, RADCLIFFE INFIRMARY AND COUNTY HOSPITAL.—House Surgeon, also Junior House Surgeon, both for six months. Salaries at rate of £80 per annum, with board, &c.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E. Resident Medical Officer. Salary £100 per annum, with board, residence, and washing. Also House Surgeon for six months. Salary at rate of £60 per annum, with board, residence, and washing. Also Clinical Assistants for six months.

SUNDERLAND INFIRMARY.—Two House Surgeons. Salary £80 per annum, with board, residence, and washing.

THROAT HOSPITAL, Golden-square, W.—Surgical Registrar. Salary 20 guineas per annum.

UNIVERSITY COLLEGE HOSPITAL, Gower-street, W.C.—Medical Officer-in-Charge of the Electro-Radiographic Department.

WOLVERHAMPTON AND MIDLAND COUNTIES EYE INFIRMARY.—House Surgeon. Salary £80 per annum, with apartments, board, and laundry.

YARMOUTH COUNTY BOROUGH.—Assistant Medical Officer of Health. Salary £225 per annum.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies as Certifying Surgeons under the Factory and Workshop Act at Wootton Bassett, in the county of Wilts; and at Rayleigh in the county of Essex.

Births, Marriages, and Deaths.

BIRTHS.

GOING.—On Jan. 11th, at Erinagh, Littlehampton, the wife of R. M. Going, F.R.C.S. Eng.—a daughter.

MARTIN.—On Jan. 8th, at Clock Cottage, Abingdon, the wife of Paulin John Martin, M.R.C.S., L.R.C.P., of a son.

NITCH.—On Jan. 18th, at Harley-street, W., the wife of Cyril A. R. Nitch, M.S., F.R.C.S., of a daughter.

PENROSE.—On Jan. 15th, at West Bar, Banbury, to Dr. and Mrs. Nevill Penrose, a son (stillborn).

THOMAS.—On Jan. 10th, at Goodwick, S. Wales, the wife of H. Mortimer Thomas, M.R.C.S., L.R.C.P., of a daughter.

MARRIAGES.

MACKEY—PUGIN.—On Jan. 15th, at Church of the Holy Trinity, Brook Green, W., Leonard George Mackey, M.D., to Florence Maryon, elder daughter of the late Peter Paul Pugin, K.S.S., and Mrs. Pugin, and granddaughter of the late Augustus Welby Pugin.

DEATHS.

KEITH.—On Jan. 12th, at Moidart, Currie, Midlothian, George Skene Keith, M.D., F.R.C.P.E., LL.D., in his 91st year.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

A DANGEROUS SWINDLER.

A MAN named John Birnhard, described as a clerk, was recently sentenced by Mr. Dickinson for obtaining money by false pretences of an unusual character from young women. The methods adopted by the prisoner in the case gone into before the magistrate were apparently followed with equal success in other instances, and the prosecution was undertaken by the Jewish Association for the Protection of Girls and Women, which is to be congratulated upon having brought a scoundrel to justice. In the case tried Birnhard was introduced in the street to Dora Morris, a girl 19 years of age, by one of her companions, when he represented himself as being "a doctor at the London Hospital and University Hospital." He heard Morris cough and gave her a prescription, afterwards visiting her at her home, when he pretended to make an examination, prescribed again, mentioning a druggist to whom the prescription was to be taken, and declined to charge, stating that he would treat her as a friend. He represented, however, that she was suffering from chronic bronchitis, and offered to get her into an institution where she could be treated. The ingenious and circumstantial story by which he obtained small sums of money to pay for the cost of this treatment, though successful at first, led to his undoing. He told the girl's mother that the cost of placing her daughter in the institution would be three guineas, but that he could get the money from benevolent persons. These he named in detail, and mentioned among them the Hon. Gerald Montagu, engaged in philanthropic work at a boys' club in Fordham-street, whom he represented later as subscribing 1 guinea. Up to this point he had not asked the Morris family for money, but he afterwards informed them that they must give him 3*s.* 6*d.* for a "form," and also 1 guinea to make up the sum of £6 6*s.*, which he had ascertained to be necessary for a complete cure, and of which he had been able to collect for them £5 5*s.* When this guinea was paid he made a second examination of the girl and took part in the removal of her clothing for the purpose. A letter giving instructions as to the whereabouts of the promised institution, of which he had shown a genuine prospectus, was signed by him, "John Birnhard, F.R.C.S." Suspicion, however, was roused by information received from other girls, and application to Mr. Montagu confirmed it at once by showing that this gentleman knew nothing of the man who claimed to have obtained a guinea from him. Evidence at the hearing further proved that Birnhard had had no connexion whatever with the London Hospital, and that his name was not on the Medical Register. In passing a sentence of six months' hard labour Mr. Dickinson laid stress on the evidence as to the pretended medical examinations of a partially unclothed girl, and pointed out that they might have been charged as indecent assaults. It is to be regretted that they were not, as the sentence is by no means a severe one if the fact is taken into account that there were other similar charges against the accused.

THE PREPARATION OF SOURED MILK.

To the Editor of THE LANCET.

SIR,—Owing to the difficulty which I have experienced during the past year in obtaining uniform results in curdling milk with various of the apparatus on the market worked with a night-light, I have had made an electric oven of simple character, a brief description of which may be of interest and helpful to some of your readers. It consists of an ordinary wooden box, about 2 feet by 3 feet by 2 feet, lined with asbestos and fitted with a metal tray sliding in and out and warmed by two 8-c.p. electric lamps. A thermometer is passed through a cork in the top, just as in a bacteriological oven. The front of the box works on a hinge and falls down to allow of the removal of the metal tray which holds about 30 glasses. It is also fitted with a small sliding door, about 2 inches by 8 inches, by means of which a supply of cooler air is regulated to prevent the temperature of the box from getting too high. The temperature runs from 105° to 108° F. as a rule, the best results in curdling being so obtained. The apparatus can be made by any good joiner, and is well worth the attention of any medical man interested in soured milk who has the electric current in his house.

I have now practically given up tablets for souring purposes with the exception of Boucard's, which I sometimes use with very good result for starting a new series of cultures. When the souring is once started, however, one can go on from day to day by inoculating each glass of milk with a small portion—about a saltspoonful—of the previous day's curd. This may be done for at least a fortnight, when a new strain is started. Dr. Herschell, who has written much on this subject, has elsewhere expressed strong disapproval of this method as theoretically unsound, and he questions if the bacillus of Massol can be found at the end of a week. As I have myself found it in numbers in a curd which was over a month old as regards fresh inoculation, and had my

finding confirmed by an expert bacteriologist, it is plain that Dr. Herschell is mistaken.

Provided the temperature of the apparatus used in souring is kept fairly even—about 106°–107° F.—and a reliable culture, either liquid or in tablet form, is employed to start, there is no special difficulty about any medical man or intelligent patient preparing excellent soured milk capable of doing all that can be therapeutically or dietetically claimed for it.

I am, Sir, yours faithfully,

The Hydropathic, Peebles, Jan. 17th, 1910. T. D. LUKE.

BEER IN SYPHONS.

FROM the hygienic point of view there is a good deal to be said in favour of distributing beer to the consumer in a clean capacious glass syphon. The beer need never come into contact with air on account of which objectionable changes often set in. Every part of the syphon is accessible for cleaning purposes, and should uncleanliness occur it can be observed. Not one of these advantages applies to beer in barrel. The Bernard Beer Co. of 71, Bond-street, South Lambeth, have made a very successful attempt to keep beer clean, brisk, and bright in a syphon and out of contact with the air by means of the device shown in the accompanying illustration. A small cylinder of carbonic acid gas can be released in just sufficient quantity to elevate or gently force the beer up the syphon tube through the tap. An excess of gas is avoided by means of a counter pressure chamber which automatically regulates the supply of gas exactly to the pressure necessary to empty the syphon as aliquot measures of the beer are required. There is thus no objection-able super-carbonation of the beer. The beer distributed in this manner keeps in an excellent sound condition and brilliant. For light beers of the lager type the method answers very satisfactorily. Syphons equivalent to half a dozen or a dozen bottles of beer are supplied. Care is taken to sterilise the parts of the syphon before filling it. This method of distributing beer seems to us to mark a distinct advance, both from a point of view of hygiene and of convenience.

A "MILK RECORD SCHEME."

A FREQUENT correspondent writes:—"Although Mr. Burns's Milk Bill was not successful in passing through all its stages in Parliament and was ultimately withdrawn, it will not be at all surprising to hear that the agitation for a purer milk-supply is having some effect. There is no doubt that the introduction of the Bill did do an immense amount of good, if only in calling the attention of dairy farmers to the great importance of what, after all, is elementary cleanliness, and, further, the great danger of milk from cows found to be tuberculous. But while there is no connexion between this agitation and a recent action of the East Sussex education committee, it is very noteworthy that this go-ahead body has just approved a 'milk record scheme,' the object of which will be to encourage and assist breeders and owners of dairy cattle to keep records of the milk yield of their cows. It is proposed that a student of the Uckfield Agricultural College, which is controlled by the East Sussex county council, should be appointed to take charge of the work, visit farms, and carry out the necessary weighing and testing. Twelve herds are allowed for by the scheme to be tested once a fortnight. It is further proposed to provide a biological laboratory and a private study for the students at the College. Nothing but good could possibly result from such a scheme, but it remains to be seen how it will be received by the farmers' clubs. It would seem that a weak point is that the work should be carried out by a pupil at the college. However, the progress of the scheme will be watched with a deal of interest."

THE BIRTHPLACE OF GOLDSMITH.

To the Editor of THE LANCET.

SIR,—The very interesting annotation in your issue of Dec. 18th, 1909, which summarised Sir James Crichton-Browne's address to the Society of Authors upon Oliver Goldsmith, brought forcibly to my mind the fact—as it has always occurred to his Celtic admirers in Ireland at least—that "poor Goldie," if unlucky in his pilgrimage of life, as he would seem to have been from the point of view of the materialist and of the hero of the muck-rake, was fortunate, even to a very exceptional degree, in the original distribution of spiritual gifts, and for the acquisition of friendships of ideal desirability in spheres illuminated by stars of phenomenal brilliancy. And although the final summons was abrupt and untimely to a degree which has ever been lamented by posterity, it must always be admitted that he was favoured by fate in leaving his gruffly benevolent and philosophic friend and patron to write an epitaph which has rarely, if ever, been paralleled in its dignity of diction and, more wonderful by far, in the graceful verity of its delineation of character, gifts, attainments, and achievements. And it may well be added at the present time, having regard to recent circumstances, that he has once more been correspondingly fortunate in having his person and his qualities delineated, and his name and fame vindicated, by a medical brother of sympathies so wide and literary attainments so comprehensive as those of Sir James Crichton-Browne. The excellence of the address referred to has combined with the record of the recent bi-centenary celebration of the memory of Samuel Johnson to bring into interesting prominence that of the life-record of the most distinguished recruit which Ireland has hitherto contributed to the ranks of our profession. Few Irish medical men, indeed, so far as I have had an opportunity of observing, ever discuss the works or the personal qualities of either Goldsmith or Johnson without introducing the name of the other. On this account the present seems to me to be a doubly favourable opportunity for calling the attention of readers of THE LANCET for a moment to the question of the localisation of the birthplace of Goldsmith, which though for a long time a good deal debated, seems to have for a considerable period been settled to the apparent satisfaction of all, or nearly all, English readers. It is now nearly a couple of decades ago, when spending some weeks of holiday retirement in the Co. Roscommon, that I learned, for the first time and with considerable surprise, that the unbroken tradition of the neighbourhood of Drumsna (that of the home of the Considine family) testified that Oliver Goldsmith first saw the light there, at the home of his maternal grandmother. The probability was, of course, powerfully corroborated for me by recollection of the fact that it was a well-known Irish custom—specially respected in that part of the country—that a young married woman should repair to her mother's residence for her lying-in. Not long afterwards I published this item of information in a medical comtemporary—without eliciting any special notice. Accordingly I was much gratified when, a few years later, Dr. Michael F. Cox (of St. Vincent's Hospital, Dublin) published in the *National Literary Journal* a paper dealing with the disputed data regarding the birthplace of the author of the "Vicar of Wakefield," with the thoroughness and precision which characterised all his literary as well as scientific communications. And I was further pleased on finding that in the delightful volume which was afterwards published by the Catholic Dean of Athlone, the Very Rev. J. J. Kelly, bearing the title of "The Haunts of Goldsmith," the author offered the most satisfactory evidence that his hero really was by birth a fellow-countryman of the humble writer of the present communication.

I am, Sir, yours faithfully,

Dublin, Jan. 11th, 1910. JOHN KNOTT, M.D. Dub.

PUBLIC INSTRUCTION ON MILK.

A COURSE of six lectures on milk, intended for those in the milk trade, will be delivered by Dr. A. Harden, F.R.S. (of the Lister Institute), at the South-Western Polytechnic Institute, Manresa-road, Chelsea, S.W., on Thursday evenings, at 7.30 o'clock, commencing Feb. 3rd. The course will be followed by practical work. The syllabus of the lectures shows that the subject will be dealt with under these heads:—The Chief Properties of Milk; Bacteria in Milk; Changes Produced in Milk by Bacteria; Spread of Disease by Milk; Preventive Measures. The classes in practical work, which will be held immediately after the lectures, will include simple methods of ascertaining the composition of milk and the detection of impurities and preservatives in milk. As the fee for the course is only the nominal one of 2*s.* 6*d.* we can conceive that considerable practical good may arise out of it, but the lecturer will have some trouble in talking down to his audience, while if this is not done his trouble may be wasted.

THE RESPONSIBILITIES OF OFFICE.

ACCORDING to a recent speech by Mr. Churchill in Dundee Mr. Herbert Gladstone has submitted personally to a nasal feed of egg and milk and was able to converse during the whole of the operation. Truly the modern statesman must be a man of many parts.

AN ALLEGED ELECTRIC THERAPEUTIST SENT TO PRISON.

Wilson Rae, a man described as an electric therapeutist, and carrying on business under the title "The Rae Electric Light Institute" at an address in Bond-street, was convicted recently at the Old Bailey of obtaining jewellery from a tradesman at Upton Park by false pretences. He drove to the shop in a motor-car with a lady for whom the rings and other valuable articles, selected by him, were said to be destined, but a cheque for £188 which he gave in payment was dishonoured, and some of the rings were discovered to have been pawned. Rae was also found guilty of bigamy on another indictment, his victim being a young woman connected with the music hall stage, with whom he went through the form of marriage in last November at the Staines registry office. He was sentenced to 15 months and three months respectively for these two offences. We do not profess to know the nature of the *clientèle* which Wilson Rae entertained at the "Rae Electric Light Institute," but we hope that some of those who may feel tempted to have recourse to similar speciously named agencies professing to supply treatment of a medical character will note his case. They will do well to consult their medical advisers before indulging in electricity, baths, and massage advertised for curative purposes by unscrupulous persons.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 20, Hanover-square, W.

MONDAY.

ODONTOLOGICAL SECTION (Hon. Secretaries—D. P. Gabell, E. B. Dowsett, J. Howard Mummery): at 8 P.M.

Papers:

(Adjourned from November meeting.) Dr. Eyre and Mr. J. Lewin Payne: Some Observations on the Bacteriology of Pyorrhœa Alveolaris and the Results of Treatment by Bacterial Vaccines. Mr. Payne will give his Supplementary Remarks.

Mr. Kenneth Goadby: The Vaccine Treatment of Early Cases of Pyorrhœa Alveolaris.

TUESDAY.

MEDICAL SECTION (Hon. Secretaries—A. M. Gossage, A. F. Voelcker): at 5.30 P.M.

Paper:

Dr. Llewellyn Phillips: The Treatment of Tetanus by the Intraspinal Injection of a Solution of Magnesium Sulphate (with cases).

THURSDAY.

BALNEOLOGICAL AND CLIMATOLOGICAL SECTION (Hon. Secretaries—Septimus Sunderland, F. A. de T. Mouillot): at 5.30 P.M.

Paper:

Dr. Ackerley: Saline Waters and the Use and Abuse of Common Salt.

NEUROLOGICAL SECTION (Hon. Secretaries—E. Farquhar Buzzard, Wilfred Harris): at 8.30 P.M.

Discussion:

On Syphilitic and Metasyphilitic Diseases of the Nervous System (opened by Dr. Frederick Mott, F.R.S.). Dr. Henry Head, F.R.S., will continue the Discussion.

FRIDAY.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—E. I. Spriggs, J. P. Lockhart Mummery, J. T. Leon): at 4.30 P.M.

Cases:

Dr. Frew (for Dr. F. E. Batten): Meningococcal Meningitis treated by Meningococcal Serum (Lister) with Rapid Improvement.

Mr. Sydney Stephenson and Dr. Eric Pritchard: Basedow's Disease in a Lad of 9 Years.

Dr. F. Parkes Weber; Splenomegalic Anæmia, with Hydrocephalus, improved by Anti-syphilitic Treatment.

Dr. O. K. Williamson; Spastic Diplegia.

Mr. Douglas Drew: Separation of Lower Epiphysis of Femur with Displacement Forward on to the Shaft.

Mr. J. M. G. Swainson: A Child from whom a Strangulated Ovarian Cyst was Removed.

Dr. Vincent Dickinson: Enlarged Spleen.

Mr. Bishop Harman: (1) Abnormal Congenital Pigmentation of One Eye; (2) Two Cases of Familial Discoid or Coppock Cataract.

Specimens:

Dr. H. D. Rolleston and Dr. A. C. D. Firth: Hemiatrophy of Brain in an Infant.

Dr. J. D. Rolleston: Diphtheria of the Fauces and Ano-genital Region in an Infant.

Dr. Forsyth: Specimen from a Case of Congenital Œdema with Dilatation of the Abdominal Lymphatics.

Dr. E. I. Spriggs and Dr. H. F. L. Hugo: X Ray Photographs from a Case of Constipation.

Dr. A. C. D. Firth: Prolapse of Intestine through Ectopia Vesicæ.

Papers:

Dr. A. E. Russell: A Case of Cyclic Vomiting in a Child associated with Hypertrophic Stenosis of the Pylorus.

Dr. Donald Carter: Infant feeding.

EPIDEMIOLOGICAL SECTION (Hon. Secretaries—W. H. Hamer, G. S. Buchanan): at 8.30 P.M.

Paper:

Dr. F. Graham Crookshank: The Control of Scarlet Fever.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY.—8 P.M., Clinical Evening. Cases will be exhibited by Dr. P. Weber, Dr. Dorner, Dr. F. J. Poynton, Mr. A. E. Barker, Mr. Openshaw, Mr. W. Evans, Mr. W. Low, Dr. Guthrie, Mr. A. Edmunds, and others.

HUNTERIAN SOCIETY, London Institution, Finsbury-circus, E.C.

WEDNESDAY.—8.30 P.M., Clinical and Pathological Evening.

HARVEIAN SOCIETY OF LONDON, Stafford Rooms, Titchborne-street, Edgware-road, W.

THURSDAY.—8.30 P.M., Clinical Evening.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM, 11, Chandos-street, Cavendish-square, W.

THURSDAY.—8 P.M., Card Exhibits by Mr. M. L. Hepburn, Mr. N. Bishop Harman, Mr. C. Blair, Mr. W. Ormond, Mr. J. H. Tomlinson, and others. 8.30 P.M., Dr. F. E. Batten: Note on a Case of Bilateral Ophthalmoplegia Externa in an Infant.—Mr. M. S. Mayou: Congenital Anterior Synechiæ with Buphthalmos nterior staphyloma).—Mr. M. L. Hepburn: Xerosis of the Conjunctiva and Night Blindness. 10 P.M., Council Meeting.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

MONDAY.—4 P.M., Dr. T. C. Fox: Clinique (Skin). 5.15 P.M., Lecture:—Dr. T. Hyslop: The Examination of Insane Criminals.

TUESDAY.—4 P.M., Dr. A. Morison: Clinique (Medical). 5.15 P.M., Lecture:—Mr. E. M. Corner: The Treatment of Septic Conditions.

WEDNESDAY.—4 P.M., Mr. T. H. Openshaw: Clinique (Surgical). 5.15 P.M., Lecture—Dr. R. A. Gibbons: On Dysmenorrhœa.

THURSDAY.—4 P.M., Sir Jonathan Hutchinson: Clinique (Surgical). 5.15 P.M., Lecture:—Dr. J. Taylor: Eye Symptoms and Signs in Nervous Diseases.

FRIDAY.—4 P.M., Mr. R. E. Bickerton: Clinique (Eye).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Lecture:—Surgical Registrar: Demonstration of Cases in Wards. 2 P.M., Medical and Surgical Clinics. Mr. Dunn: Diseases of the Eyes. 2.30 P.M., Operations. X Rays. 5 P.M., Lecture:—Mr. Baldwin: Practical Surgery.

TUESDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. X Rays. Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. Pritchard: Clinical Medicine.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Diseases of the Throat, Nose, and Ear. 12.15 P.M., Lecture:—Dr. G. Stewart: Practical Medicine. 2 P.M., Medical and Surgical Clinics. Mr. B. Harman: Diseases of the Eyes. 2.30 P.M., Operations. X Rays. Dr. Robinson: Diseases of Women. 5 P.M., Lecture:—Mr. Beddard: Medicine.

THURSDAY.—10 A.M., Lecture:—Surgical Registrar: Demonstration of Cases in Wards. 12 noon, Pathological Demonstration:—Dr. Bernstein. 2 P.M., Medical and Surgical Clinics. Mr. Dunn: Diseases of the Eyes. 2.30 P.M., Operations. X Rays. 5 P.M., Dr. Cole. Adolescent Insanity.

FRIDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. Medical Registrar: Demonstration of Cases in the Wards. 2 P.M., Medical and Surgical Clinics. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. X Rays. Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. Morton: X Ray Examination of the Digestive System.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Mr. B. Harman: Diseases of the Eyes. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. 2.30 P.M., Operations. X Rays.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10 A.M., Surgical Out-patient (Mr. H. Evans), 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Nose, Throat, and Ear (Mr. H. W. Carson). 4.30 P.M., Medical In-patient (Dr. A. J. Whiting).

TUESDAY.—Clinic: 10 A.M., Medical Out-patient (Dr. A. G. Auld). 2.30 P.M., Operations. Clinics:—Surgical (Mr. W. Edmunds); Gynæcological (Dr. A. E. Giles).

WEDNESDAY.—Clinics:—2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Skin (Dr. G. N. Meachen); Eye (Mr. R. P. Brooks). 3 P.M., X Rays (Dr. H. Pirie). 4.30 P.M., Lecture-Demonstration:—Dr. A. H. Pirie: The Removal of Superfluous Hairs by Electrical Methods.

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patient (Dr. A. J. Whiting); Surgical (Mr. Carson). 3 P.M., Medical In-patient (Dr. G. P. Chappel). 4.30 P.M., Lecture:—Dr. T. R. Whipham: Idiocy and Allied Disorders in Children. (Second Lecture.)

FRIDAY.—10 A.M., Clinic:—Surgical Out-patient (Mr. H. Evans). 2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Eye (Mr. R. P. Brooks). 3 P.M., Medical In-patient (Dr. R. M. Leslie).

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.

MONDAY.—2 P.M., Operations. 2.15 P.M., Mr. Turner: Surgery. 3.15 P.M., Sir Dyce Duckworth: Medicine. 4 P.M., Mr. R. Lake: Ear and Throat. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat.

TUESDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Wells: Medicine. 3.15 P.M., Mr. Carless: Surgery. 4 P.M., Sir M. Morris: Diseases of the Skin. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin. 3.15 P.M., Special Lecture:—Mr. Carless: Some Cases of Sarcoma of the Femur.

WEDNESDAY.—2 P.M., Operations. 2.15 P.M., Dr. F. Taylor: Medicine. 3.30 P.M., Mr. Cargill: Ophthalmology. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.

THURSDAY.—2 P.M., Operations. 2.15 P.M., Dr. G. Rankin: Medicine. 3.15 P.M., Sir W. Bennett: Surgery. 4 P.M., Dr. Sale-Barker: Radiography. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat.

FRIDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Bradford: Medicine. 3.15 P.M., Mr. McGavin: Surgery. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin. 2.15 P.M., Dr. Rose Bradford: Pyleo-nephritis.

SATURDAY.—2 P.M., Operations. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.

WEST-END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, 73, Welbeck-street, W

MONDAY.—3 P.M., Clinical Demonstration: Dr. H. Campbell.

TUESDAY.—5 P.M., Clinical Demonstration:—Dr. J. Mackenzie.

WEDNESDAY.—3 P.M., Clinical Demonstration:—Dr. F. Palmer.

FRIDAY.—2 P.M., Clinical Demonstration:—Dr. P. Stewart. 5.30 P.M. Clinical Demonstration: Dr. E. Macnamara.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.

TUESDAY.—3.30 P.M., Clinical Lecture: Dr. H. Tooth: Paraplegia.

FRIDAY.—3.30 P.M., Clinical Lecture;—Dr. H. Tooth: Gait as a Means of Diagnosis.

HOSPITAL FOR SICK CHILDREN (UNIVERSITY OF LONDON), Great Ormond-street, W.C.

THURSDAY.—4 P.M., Lecture:—Dr. W. S. Colman: Demonstration of Selected Cases in the Medical Wards.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester-square, W.C.

THURSDAY.—6 P.M., Chesterfield Lecture:—Seborrhœa and Psoriasis dealt with as Stages of the same Dermatitis in Symptoms, Diagnosis, and Treatment.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (24th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.), Central London Throat and Ear (Minor 9 A.M., Major 2 P.M.).

TUESDAY (25th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College 2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

WEDNESDAY (26th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan 9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

THURSDAY (27th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, (9 A.M., Major, 2 P.M.).

FRIDAY (28th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.) Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.), Central London Throat and Ear (Minor 9 A.M., Major, 2 P.M.).

SATURDAY (29th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

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It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

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MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. II. of 1909 were given in THE LANCET of Dec. 25th, 1909.

VOLUMES AND CASES.

VOLUMES for the second half of the year 1909 are now ready. Bound in cloth, gilt lettered, price 18*s.*, carriage extra.

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METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Jan. 19th, 1909.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Jan. 13	30·15	N.W.	...	59	50	33	33	34	Fine
,, 14	30·0	S.W.	0·01	64	54	34	49	50	Overcast
,, 15	30·25	W.	...	51	48	45	46	45	Cloudy
,, 16	29·94	S.W.	0·03	56	53	45	50	52	Cloudy
,, 17	29·72	S.W.	0·11	65	46	43	41	43	Cloudy
,, 18	29·48	W.	0·09	54	49	41	42	44	Cloudy
,, 19	29·44	WNW	0·02	58	46	41	39	41	Fine

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